

Hands On Chatbots And Conversational Ui Development Build Chatbots And Voice User Interfaces With Chatfuel Dialogflow Microsoft Bot Framework Twilio And Alexa Skills

Create next-level AI assistants and transform how customers communicate with businesses with the power of natural language understanding and dialogue management using Rasa Key Features Understand the architecture and put the underlying principles of the Rasa framework to practice Learn how to quickly build different types of chatbots such as task-oriented, FAQ-like, and knowledge graph-based chatbots Explore best practices for working with Rasa and its debugging and optimizing aspects Book Description The Rasa framework enables developers to create industrial-strength chatbots using state-of-the-art natural language processing (NLP) and machine learning technologies quickly, all in open source. Conversational AI with Rasa starts by showing you how the two main components at the heart of Rasa work – Rasa NLU (natural language understanding) and Rasa Core. You'll then learn how to build, configure, train, and serve different types of chatbots from scratch by using the Rasa ecosystem. As you advance, you'll use form-based dialogue management, work with the response selector for chitchat and FAQ-like dialogs, make use of knowledge base actions to answer questions for dynamic queries, and much more. Furthermore, you'll understand how to customize the Rasa framework, use conversation-driven development patterns and tools to develop chatbots, explore what your bot can do, and easily fix any mistakes it makes by using interactive learning. Finally, you'll get to grips with deploying the Rasa system to a production environment with high performance and high scalability and cover best practices for building an efficient and robust chat system. By the end of this book, you'll be able to build and deploy your own chatbots using Rasa, addressing the common pain points encountered in the chatbot life cycle. What you will learn Use the response selector to handle chitchat and FAQs Create custom actions using the Rasa SDK Train Rasa to handle complex named entity recognition Become skilled at building custom components in the Rasa framework Validate and test dialogs end to end in Rasa Develop and refine a chatbot system by using conversation-driven deployment processing Use TensorBoard for tuning to find the best configuration options Debug and optimize dialogue systems based on Rasa Who this book is for This book is for NLP professionals as well as machine learning and deep learning practitioners who have knowledge of natural language processing and want to build chatbots with Rasa. Anyone with beginner-level knowledge of NLP and deep learning will be able to get the most out of the book.

The second volume of this research monograph describes a number of applications of Artificial Intelligence in the field of Customer Relationship Management with the focus of solving customer problems. We design a system that tries to understand the customer complaint, his mood, and what can be done to resolve an issue with the product or service. To solve a customer problem efficiently, we maintain a dialogue with the customer so that the problem can be clarified and multiple ways to fix it can be sought. We introduce dialogue management based on discourse analysis: a systematic linguistic way to handle the thought process of the author of the content to be delivered. We analyze user sentiments and personal traits to tailor dialogue management to individual customers. We also design a number of dialogue scenarios for CRM with replies following certain patterns and propose virtual and social dialogues for various modalities of communication with a customer. After we learn to detect fake content, deception and hypocrisy, we examine the domain of customer complaints. We simulate mental states, attitudes and emotions of a complainant and try to predict his behavior. Having suggested graph-based formal representations of complaint scenarios, we machine-learn them to identify the best action the customer support organization can chose to retain the complainant as a customer.

Design, develop, and deploy human-like AI solutions that chat with your customers, solve their problems, and streamline your support services. In Conversational AI, you will learn how to: Pick the right AI assistant type and channel for your needs Write dialog with intentional tone and specificity Train your AI's classifier from the ground up Create question-and-direct-response AI assistants Design and optimize a process flow for web and voice Test your assistant's accuracy and plan out improvements Conversational AI: Chatbots that work teaches you to create the kind of AI-enabled assistants that are revolutionizing the customer service industry. You'll learn to build effective conversational AI that can automate common inquiries and easily address your customers' most common problems. This engaging and entertaining book delivers the essential technical and creative skills for designing successful AI solutions, from coding process flows and training machine learning, to improving your written dialog.

Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Create AI-driven chatbots and other intelligent agents that humans actually enjoy talking to! Adding intelligence to automated response systems saves time and money for you and your customers. Conversational AI systems excel at routine tasks such as answering common questions, classifying issues, and routing customers to the appropriate human staff. This book will show you how to build effective, production-ready AI assistants. About the book Conversational AI is a guide to creating AI-driven voice and text agents for customer support and other conversational tasks. This practical and entertaining book combines design theory with techniques for building and training AI systems. In it, you'll learn how to find training data, assess performance, and write dialog that sounds human. You'll go from building simple chatbots to designing the voice assistant for a complete call center. What's inside Pick the right AI for your needs Train your AI classifier Create question-and-direct-response assistants Design and optimize a process flow About the reader For software developers. Examples use Watson Assistant and Python. About the author Andrew R. Freed is a Master Inventor and Senior Technical Staff Member at IBM. He has worked in AI solutions since 2012. Table of Contents PART 1 FOUNDATIONS 1 Introduction to conversational AI 2 Building your first conversational AI PART 2 DESIGNING FOR SUCCESS 3 Designing effective processes 4 Designing effective dialogue 5 Building a successful AI assistant PART 3 TRAINING AND TESTING 6 Training your assistant 7 How accurate is your assistant? 8 Testing your dialogue flows PART 4 MAINTENANCE 9 Deployment and management 10 Improving your assistant PART 5 ADVANCED/OPTIONAL TOPICS 11 Building your own classifier 12 Additional training for voice assistants

A complete guide to build a better Chatbots DESCRIPTION This book makes you familiar with the concept of the chatbot. It explains what chatbot is, how does a chatbot work, and what exactly is the need for a chatbot in today's era? It focuses on creating a bot using Amazon's Lex service and getting the bot deployed on Facebook messenger for live chatting. This book will train you on how to create a chatbot using Google's Dialogflow and test the bot in Dialogflow console. It also demonstrates how to create a custom chatbot using Microsoft's bot framework and enable the webhooks in Dialogflow and return the response from the custom bot to Dialogflow intents as a fulfilment response. KEY FEATURES Concept of artificial intelligence (AI) and machine learning How AI is involved in creating chatbots What are chatbots Chatbot development Live chatting Create chatbot with technologies such as Amazon Lex, Google Dialogflow, AWS Lambda, Microsoft Bot Framework, and Azure Deploy and talk to your bot WHAT WILL YOU LEARN Learn the concept of chatbot Learn how chatbots and AI work hand in hand Learn the concept of machine learning in chatbots Get familiar with chatbot services such as Amazon's Lex and Google's Dialogflow Learn how to write an AWS Lambda function Learn what webhooks are Learn about Microsoft's Bot Framework Write your own custom chatbot Deploy the chatbot on Facebook Messenger, Google Assistant, and Slack Live chatting with your own chatbot WHO THIS BOOK IS FOR The developers, architects, and software/technology enthusiasts who are keen to learn the cutting-edge technologies and want to get a hands-on experience on AI by creating their own custom chatbots. Organizations, small companies, service-based/product-based setups which want to learn how to create a basic chatbot on their website and on social media to get more leads and reach to the end user for their business. Students, if they are seeking something where they can create and integrate the

real-time chatbots in their projects. Table of Contents Section 1: The Concept 1. What are Chatbots? 2. How Chatbot Works 3. What is the Need for a Chatbot? 4. Conversational Flow? Section 2: Creating a Chatbot Using Amazon Lex 1. Amazon Lex and AWS Account 2. Create Bot Using Amazon Lex 3. AWS Lambda Function 4. Slots 5. Error Handling 6. Deploy the Bot on Facebook Messenger 7. Live Chatbot on Facebook Section 3: Creating a Chatbot Using Dialogflow API and Microsoft's Bot Framework Technical Requirements 1. Dialogflow Account 2. Creating a Bot in Dialogflow 3. Dialogflow Console 4. Integrating the Bot with Slack 5. Chatbot Using Microsoft Bot Framework 6. Publishing the Bot from Visual Studio to Azure 7. Register the Bot 8. Dialogflow.v2 SDK 9. Webhooks in Dialogflow 10. Testing the Bot 11. Deploy the Chatbot in Facebook Messenger 12. Live Chatbot on Facebook 13. Deploy the Chatbot in Slack

Build enterprise chatbots for web, social media, voice assistants, IoT, and telephony contact centers with Google's Dialogflow conversational AI technology. This book will explain how to get started with conversational AI using Google and how enterprise users can use Dialogflow as part of Google Cloud. It will cover the core concepts such as Dialogflow essentials, deploying chatbots on web and social media channels, and building voice agents including advanced tips and tricks such as intents, entities, and working with context. The Definitive Guide to Conversational AI with Dialogflow and Google Cloud also explains how to build multilingual chatbots, orchestrate sub chatbots into a bigger conversational platform, use virtual agent analytics with popular tools, such as BigQuery or Chatbase, and build voice bots. It concludes with coverage of more advanced use cases, such as building fulfillment functionality, building your own integrations, securing your chatbots, and building your own voice platform with the Dialogflow SDK and other Google Cloud machine learning APIs. After reading this book, you will understand how to build cross-channel enterprise bots with popular Google tools such as Dialogflow, Google Cloud AI, Cloud Run, Cloud Functions, and Chatbase. ??What You Will Learn Discover Dialogflow, Dialogflow Essentials, Dialogflow CX, and how machine learning is used Create Dialogflow projects for individuals and enterprise usage Work with Dialogflow essential concepts such as intents, entities, custom entities, system entities, composites, and how to track context Build bots quickly using prebuilt agents, small talk modules, and FAQ knowledge bases Use Dialogflow for an out-of-the-box agent review Deploy text conversational UIs for web and social media channels Build voice agents for voice assistants, phone gateways, and contact centers Create multilingual chatbots Orchestrate many sub-chatbots to build a bigger conversational platform Use chatbot analytics and test the quality of your Dialogflow agent See the new Dialogflow CX concepts, how Dialogflow CX fits in, and what's different in Dialogflow CX Who This Book Is For Everyone interested in building chatbots for web, social media, voice assistants, or contact centers using Google's conversational AI/cloud technology.

Follow a step-by-step, hands-on approach to building production-ready enterprise cognitive virtual assistants using Google Dialogflow. This book provides an overview of the various cognitive technology choices available and takes a deep dive into cognitive virtual agents for handling complex real-life use cases in various industries such as travel and weather. You'll delve deeper into the advanced features of cognitive virtual assistants implementing features such as input/output context, follow-up intents, actions and parameters, and handling complex multiple intents. You'll learn how to integrate with third-party messaging platforms by integrating your cognitive bot with Facebook messenger. You'll also integrate with third-party APIs to enrich your cognitive bots using webhooks. Cognitive Virtual Assistants Using Google Dialogflow takes the complexity out of the cognitive platform and provides rich guidance which you can use when developing your own cognitive bots. The book covers Google Dialogflow in-depth and starts with the basics, serving as a hands-on guide for developers who are starting out on their journey with Google Dialogflow. All the code presented in the book will be available in the form of scripts and configuration files, which allows you to try out the examples and extend them in interesting ways. What You Will Learn Develop cognitive bots with Google Dialogflow technology Use advanced features to handle complex conversation scenarios Enrich the bot's conversations by understanding the sentiment of the user See best practices for developing cognitive bots Enhance a cognitive bot by integrating with third-party services Who This Book Is For AI and ML developers.

Build artificial intelligence (AI) powered voice and text conversational interfaces with Amazon Key Features Develop Alexa Skills to create a working voice user interface (VUI) Integrate Amazon Lex chatbots into Facebook, Slack, and text messages Learn to use AWS Lambda, Alexa Skills Kit, and Amazon Lex Book Description Have you ever wondered how Alexa apps are made, how voice-enabled technologies work, or how chatbots function? And why tech giants such as Amazon and Google are investing in voice technologies? A better question is: why should I start developing on these platforms? Hands-On Chatbot Development with Alexa Skills and Amazon Lex covers all features of the Alexa Skills kit with real-world examples that help you develop skills to integrate Echo and chatbots into Facebook, Slack, and Twilio with the Amazon Lex platform. The book starts with teaching you how to set up your local environment and AWS CLI so that you can automate the process of uploading AWS Lambda from your local machine. You will then learn to develop Alexa Skills and Lex chatbots using Lambda functions to control functionality. Once you've come to grips with this, you will learn to create increasingly complex chatbots, integrate Amazon S3, and change the way Alexa talks to the user. In the concluding chapters, we shift our focus to Amazon Lex and messaging chatbots. We will explore Alexa, learn about DynamoDB databases, and add cards to user conversations. By the end of this book, you will have explored a full set of technologies that will enable you to create your own voice and messaging chatbots using Amazon. What you will learn Create a development environment using Alexa Skills Kit, AWS CLI, and Node.js Build Alexa Skills and Lex chatbots from scratch Gain access to third-party APIs from your Alexa Skills and Lex chatbots Use AWS services such as Amazon S3 and DynamoDB to enhance the abilities of your Alexa Skills and Amazon Lex chatbots Publish a Lex chatbot to Facebook Messenger, Twilio SMS, and Slack Create a custom website for your Lex chatbots Develop your own skills for Alexa-enabled devices such as the Echo Who this book is for Hands-On Chatbot Development with Alexa Skills and Amazon Lex is for developers who are interested in building conversational bots and Alexa skills with Amazon. Prior experience with JavaScript programming is required.

Develop intelligent voice-empowered applications and Chatbots that not only understand voice commands but also respond to it Key Features Target multiple platforms by creating voice interactions for your applications Explore real-world examples of how to produce smart and practical virtual assistants Build a virtual assistant for cars using Android Auto in Xamarin Book Description From touchscreen and mouse-click, we are moving to voice- and conversation-based user interfaces. By adopting Voice User Interfaces (VUIs), you can create a more compelling and engaging experience for your users. Voice User Interface Projects teaches you how to develop voice-enabled applications for desktop, mobile, and Internet of Things (IoT) devices. This book explains in detail VUI and its importance, basic design principles of VUI, fundamentals of conversation, and the different voice-enabled applications available in the market. You will learn how to build your first voice-enabled application by utilizing DialogFlow and Alexa's natural language processing (NLP) platform. Once you are comfortable with building voice-enabled applications, you will understand how to dynamically process and respond to the questions by using NodeJS server deployed to the cloud. You will then move on to securing NodeJS RESTful API for DialogFlow and Alexa webhooks, creating unit tests and building voice-enabled podcasts for cars. Last but not the least you will discover advanced topics such as handling sessions, creating custom intents, and extending built-in intents in order to build conversational VUIs that will help engage the users. By the end of the book, you will have grasped a thorough knowledge of how to design and develop interactive VUIs. What you will learn Understand NLP platforms with machine learning Exploit best practices and user experiences in creating VUI Build voice-enabled chatbots Host, secure, and test in a cloud platform Create voice-enabled applications for personal digital assistant devices Develop a virtual assistant for cars Who this book is for Voice User Interface Projects is for you if you are a software engineer who wants to develop voice-enabled applications for your personal digital assistant devices such as Amazon Echo and Google Home, along with your car's virtual assistant systems. Some experience with JavaScript is required.

"This book is a reference guide for researchers entering the promising field of conversational agents, providing an introduction to fundamental concepts in the field, collecting experiences of researchers working on conversational agents, and reviewing techniques for the design and application of conversational agents"--

From Facebook Messenger to Kik, and from Slack bots to Google Assistant, Amazon Alexa, and email bots, the new conversational apps are revolutionizing the way we interact with software. This practical guide shows you how to design and build great conversational experiences and delightful bots that help people be more productive, whether it's for a new consumer service or an enterprise efficiency product. Ideal for designers, product managers, and entrepreneurs, this book explores what works and what doesn't in real-world bot examples, and provides practical design patterns for your bot-building toolbox. You'll learn how to use an effective onboarding process, outline different flows, define a bot personality, and choose the right balance of rich control and text. Explore different bot use-cases and design best practices Understand bot anatomy—such as brand and personality, conversations, advanced UI controls—and their associated design patterns Learn steps for building a Facebook Messenger consumer bot and a Slack business bot Explore the lessons learned and shared experiences of designers and entrepreneurs who have built bots Design and prototype your first bot, and experiment with user feedback With recent advances in natural language understanding techniques and far-field microphone arrays, natural language interfaces, such as voice assistants and chatbots, are emerging as a popular new way to interact with computers. They have made their way out of the industry research labs and into the pockets, desktops, cars and living rooms of the general public. But although such interfaces recognize bits of natural language, and even voice input, they generally lack conversational competence, or the ability to engage in natural conversation. Today's platforms provide sophisticated tools for analyzing language and retrieving knowledge, but they fail to provide adequate support for modeling interaction. The user experience (UX) designer or software developer must figure out how a human conversation is organized, usually relying on commonsense rather than on formal knowledge. Fortunately, practitioners can rely on conversation science. This book adapts formal knowledge from the field of Conversation Analysis (CA) to the design of natural language interfaces. It outlines the Natural Conversation Framework (NCF), developed at IBM Research, a systematic framework for designing interfaces that work like natural conversation. The NCF consists of four main components: 1) an interaction model of "expandable sequences," 2) a corresponding content format, 3) a pattern language with 100 generic UX patterns and 4) a navigation method of six basic user actions. The authors introduce UX designers to a new way of thinking about user experience design in the context of conversational interfaces, including a new vocabulary, new principles and new interaction patterns. User experience designers and graduate students in the HCI field as well as developers and conversation analysis students should find this book of interest.

This book is a comprehensive and authoritative guide to voice user interface (VUI) design. The VUI is perhaps the most critical factor in the success of any automated speech recognition (ASR) system, determining whether the user experience will be satisfying or frustrating, or even whether the customer will remain one. This book describes a practical methodology for creating an effective VUI design. The methodology is scientifically based on principles in linguistics, psychology, and language technology, and is illustrated here by examples drawn from the authors' work at Nuance Communications, the market leader in ASR development and deployment. The book begins with an overview of VUI design issues and a description of the technology. The authors then introduce the major phases of their methodology. They first show how to specify requirements and make high-level design decisions during the definition phase. They next cover, in great detail, the design phase, with clear explanations and demonstrations of each design principle and its real-world applications. Finally, they examine problems unique to VUI design in system development, testing, and tuning. Key principles are illustrated with a running sample application. A companion Web site provides audio clips for each example: www.VUIDesign.org The cover photograph depicts the first ASR system, Radio Rex: a toy dog who sits in his house until the sound of his name calls him out. Produced in 1911, Rex was among the few commercial successes in earlier days of speech recognition. Voice User Interface Design reveals the design principles and practices that produce commercial success in an era when effective ASRs are not toys but competitive necessities.

This book constitutes the thoroughly refereed proceedings of the Second International Conference on Brain Function Assessment in Learning, BFAL 2020, held in Heraklion, Crete, Greece, in October 2020*. The 11 revised full papers and 10 short papers presented were carefully selected from 35 submissions. The BFAL conference aims to regroup research in multidisciplinary domains such as neuroscience, computer science, medicine, education, human-computer interactions, and social interaction on the theme of Brain Function Assessment in Learning. *The conference was held virtually due to the COVID-19 pandemic.

Working with AI is complicated and expensive for many developers. That's why cloud providers have stepped in to make it easier, offering free (or affordable) state-of-the-art models and training tools to get you started. With this book, you'll learn how to use Google's AI-powered cloud services to do everything from creating a chatbot to analyzing text, images, and video. Author Micheal Lanham demonstrates methods for building and training models step-by-step and shows you how to expand your models to accomplish increasingly complex tasks. If you have a good grasp of math and the Python language, you'll quickly get up to speed with Google Cloud Platform, whether you want to build an AI assistant or a simple business AI application. Learn key concepts for data science, machine learning, and deep learning Explore tools like Video AI and AutoML Tables Build a simple language processor using deep learning systems Perform image recognition using CNNs, transfer learning, and GANs Use Google's Dialogflow to create chatbots and conversational AI Analyze video with automatic video indexing, face detection, and TensorFlow Hub Build a complete working AI agent application

Build intelligent and smart conversational interfaces using Microsoft Bot Framework About This Book Develop various real-world intelligent bots from scratch using Microsoft Bot Framework Integrate your bots with most popular conversation platforms such as Skype, Slack, and Facebook Messenger Flaunt your bot building skills in your organization by

thoroughly understanding and implementing the bot development concepts such as messages (rich text and pictures), dialogs, and third-party authentication and calling Who This Book Is For This book is for developers who are keen on building powerful services with great and interactive bot interface. Experience with C# is needed. What You Will Learn Set up a development environment and install all the required software to get started programming a bot Publish a bot to Slack, Skype, and the Facebook Messenger platform Develop a fully functional weather bot that communicates the current weather in a given city Help your bot identify the intent of a text with the help of LUIS in order to make decisions Integrate an API into your bot development Build an IVR solution Explore the concept of MicroServices and see how MicroServices can be used in bot development Develop an IoT project, deploy it, and connect it to a bot In Detail Bots help users to use the language as a UI and interact with the applications from any platform. This book teaches you how to develop real-world bots using Microsoft Bot Framework. The book starts with setting up the Microsoft Bot Framework development environment and emulator, and moves on to building the first bot using Connector and Builder SDK. Explore how to register, connect, test, and publish your bot to the Slack, Skype, and Facebook Messenger platforms. Throughout this book, you will build different types of bots from simple to complex, such as a weather bot, a natural speech and intent processing bot, an Interactive Voice Response (IVR) bot for a bank, a facial expression recognition bot, and more from scratch. These bots were designed and developed to teach you concepts such as text detection, implementing LUIS dialogs, Cortana Intelligence Services, third-party authentication, Rich Text format, Bot State Service, and microServices so you can practice working with the standard development tools such as Visual Studio, Bot Emulator, and Azure. Style and approach This step-by-step guide takes a learn-while-doing approach, delivering the practical knowledge and experience you need to design and build real-world Bots. The concepts come to you on an as-needed basis while developing a bot so you increase your programming knowledge and experience at the same time.

Summary Voice Applications for Alexa and Google Assistant is your guide to designing, building, and implementing voice-based applications for Alexa and Google Assistant. Inside, you'll learn how to build your own "skills"—the voice app term for actions the device can perform—from scratch. Foreword by Max Amordeluso. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. You'll find registration instructions inside the print book. About the Technology In 2018, an estimated 100 million voice-controlled devices were installed in homes worldwide, and the apps that control them, like Amazon Alexa and Google Assistant, are getting more powerful, with new skills being added every day. Great voice apps improve how users interact with the web, whether they're checking the weather, asking for sports scores, or playing a game. About the Book Voice Applications for Alexa and Google Assistant is your guide to designing, building, and implementing voice-based applications for Alexa and Google Assistant. You'll learn to build applications that listen to users, store information, and rely on user context, as you create a voice-powered sleep tracker from scratch. With the basics mastered, you'll dig deeper into multiuse conversational flow and other more-advanced concepts. Smaller projects along the way reinforce your new techniques and best practices. What's inside Building a call-and-response skill Designing a voice user interface Using conversational context Going multimodal Tips and best practices About the Reader Perfect for developers with intermediate JavaScript skills and basic Node.js skills. No previous experience with voice-first platforms is required. About the Author Dustin A. Coates is a developer who focuses on voice and conversational applications. He's currently the voice search lead at Algolia and is also a Google Developers Expert for Assistant as well as cohost of the VUX World podcast. Table of Contents Introduction to voice first Building a call-and-response skill on Alexa Designing a voice user interface Using entity resolution and built-in intents in Alexa skills Making a conversational Alexa skill VUI and conversation best practices Using conversation tools to add meaning and usability Directing conversation flow Building for Google Assistant Going multimodal Push interactions Building for actions on Google with the Actions SDK

This book provides a comprehensive introduction to the conversational interface, which is becoming the main mode of interaction with virtual personal assistants, smart devices, various types of wearable, and social robots. The book consists of four parts. Part I presents the background to conversational interfaces, examining past and present work on spoken language interaction with computers. Part II covers the various technologies that are required to build a conversational interface along with practical chapters and exercises using open source tools. Part III looks at interactions with smart devices, wearables, and robots, and discusses the role of emotion and personality in the conversational interface. Part IV examines methods for evaluating conversational interfaces and discusses future directions.

This book constitutes the refereed proceedings of the Third International Workshop on Chatbot Research and Design, CONVERSATIONS 2019, held in Amsterdam, The Netherlands, in November 2019. The 18 revised full papers presented in this volume were carefully reviewed and selected from 31 submissions. The papers are grouped in the following topical sections: user and communication studies user experience and design, chatbots for collaboration, chatbots for customer service, and chatbots in education. Conversation as an interface is the best way for machines to interact with us using the universally accepted human tool that is language. Chatbots and voice user interfaces are two flavors of conversational UIs. Chatbots are real-time, data-driven answer engines that talk in natural language and are context-aware. Voice user interfaces are ...

This 2 volume-set of IFIP AICT 583 and 584 constitutes the refereed proceedings of the 16th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2020, held in Neos Marmaras, Greece, in June 2020.* The 70 full papers and 5 short papers presented were carefully reviewed and selected from 149 submissions. They cover a broad range of topics related to technical, legal, and ethical aspects of artificial intelligence systems and their applications and are organized in the following sections: Part I: classification; clustering - unsupervised learning -analytics; image processing; learning algorithms; neural network modeling; object tracking - object detection systems; ontologies - AI; and sentiment analysis - recommender systems. Part II: AI ethics - law; AI constraints; deep learning - LSTM; fuzzy algebra - fuzzy systems; machine learning; medical - health systems; and natural language. *The

conference was held virtually due to the COVID-19 pandemic.

This book provides a comprehensive introduction to Conversational AI. While the idea of interacting with a computer using voice or text goes back a long way, it is only in recent years that this idea has become a reality with the emergence of digital personal assistants, smart speakers, and chatbots. Advances in AI, particularly in deep learning, along with the availability of massive computing power and vast amounts of data, have led to a new generation of dialogue systems and conversational interfaces. Current research in Conversational AI focuses mainly on the application of machine learning and statistical data-driven approaches to the development of dialogue systems. However, it is important to be aware of previous achievements in dialogue technology and to consider to what extent they might be relevant to current research and development. Three main approaches to the development of dialogue systems are reviewed: rule-based systems that are handcrafted using best practice guidelines; statistical data-driven systems based on machine learning; and neural dialogue systems based on end-to-end learning. Evaluating the performance and usability of dialogue systems has become an important topic in its own right, and a variety of evaluation metrics and frameworks are described. Finally, a number of challenges for future research are considered, including: multimodality in dialogue systems, visual dialogue; data efficient dialogue model learning; using knowledge graphs; discourse and dialogue phenomena; hybrid approaches to dialogue systems development; dialogue with social robots and in the Internet of Things; and social and ethical issues.

This is the only comprehensive, authoritative guide to building Conversational User Interfaces (CUI, a.k.a. bots, chatbots, or chatterbots) with the Microsoft Bot Framework. Reflecting the next radical revolution in human-computer interaction, it will help you leverage advanced artificial intelligence (AI) and natural language processing to empower new and existing applications with stunningly intuitive conversational interfaces. Long-time Microsoft MVP Joe Mayo begins with high-level explanations of what Microsoft Bot Framework is, what you can do with it, and why it matters so much. Next, he presents the foundational knowledge you need to start creating real bots and CUIs. Step by step, you'll learn how to build message dialogs, manage conversations, interact with framework APIs, and incorporate powerful natural language processing with Microsoft's advanced Language Understanding Intelligent Service (LUIS). Mayo also offers detailed guidance on deploying your customized bots to key platforms such as Slack, Skype, and Facebook Messenger. Throughout, Mayo's practical examples combine code with clear explanations of when and why you would perform each task. From start to finish, Programming the Microsoft Bot Framework is relentlessly practical, helping you translate the advanced "magic" of intelligent bots into real solutions right now.

Create conversational UIs using cutting-edge frameworks Key Features Build AI chatbots and voicebots using practical and accessible toolkits Design and create voicebots that really shine in front of humans Work with familiar appliances like Alexa, Google Home, and FB Messenger Design for UI success across different industries and use cases Book Description We are entering the age of conversational interfaces, where we will interact with AI bots using chat and voice. But how do we create a good conversation? How do we design and build voicebots and chatbots that can carry successful conversations in in the real world? In this book, Rachel Batish introduces us to the world of conversational applications, bots and AI. You'll discover how - with little technical knowledge - you can build successful and meaningful conversational UIs. You'll find detailed guidance on how to build and deploy bots on the leading conversational platforms, including Amazon Alexa, Google Home, and Facebook Messenger. You'll then learn key design aspects for building conversational UIs that will really succeed and shine in front of humans. You'll discover how your AI bots can become part of a meaningful conversation with humans, using techniques such as persona shaping, and tone analysis. For successful bots in the real world, you'll explore important use-cases and examples where humans interact with bots. With examples across finance, travel, and e-commerce, you'll see how you can create successful conversational UIs in any sector. Expand your horizons further as Rachel shares with you her insights into cutting-edge voicebot and chatbot technologies, and how the future might unfold. Join in right now and start building successful, high impact bots! What you will learn Build your own AI voicebots and chatbots Use familiar appliances like Alexa, Google Home, and Facebook Messenger Master the elements of conversational user interfaces Key design techniques to make your bots successful Use tone analysis to deepen UI conversation for humans Create voicebots and UIs designed for real-world situations Insightful case studies in finance, travel, and e-commerce Cutting-edge technology and insight into the future of AI bots Who this book is for This book is for you, if you want to deepen your appreciation of UI and how conversational UIs - driven by artificial intelligence - are transforming the way humans interact with computers, appliances, and the everyday world around us. This book works with the major UI toolkits available today, so you do not need a deep programming knowledge to build the bots in this book: a basic familiarity with markup languages and JavaScript will give you everything you need to start building cutting-edge conversational UIs.

Take your Python machine learning ideas and create serverless web applications accessible by anyone with an Internet connection. Some of the most popular serverless cloud providers are covered in this book—Amazon, Microsoft, Google, and PythonAnywhere. You will work through a series of common Python data science problems in an increasing order of complexity. The practical projects presented in this book are simple, clear, and can be used as templates to jump-start many other types of projects. You will learn to create a web application around numerical or categorical predictions, understand the analysis of text, create powerful and interactive presentations, serve restricted access to data, and leverage web plugins to accept credit card payments and donations. You will get your projects into the hands of the world in no time. Each chapter follows three steps: modeling the right way, designing and developing a local web application, and deploying onto a popular and reliable serverless cloud provider. You can easily jump to or skip particular topics in the book. You also will have access to Jupyter notebooks and code repositories for complete versions of the code covered in the book. What You'll Learn Extend your machine learning models using simple techniques to create compelling and interactive web dashboards Leverage the Flask web framework for rapid prototyping of your Python models and ideas Create dynamic content powered by regression coefficients, logistic regressions, gradient boosting machines, Bayesian classifications, and more Harness the power of TensorFlow by exporting saved models into web applications Create rich web dashboards to handle complex real-time user input with JavaScript and Ajax to yield interactive and tailored content Create dashboards with paywalls to offer subscription-based access Access API data such as Google Maps, OpenWeather, etc. Apply different approaches to make sense of text data and return customized intelligence Build an intuitive and useful recommendation site to add value to users and entice them to keep coming back Utilize the freemium offerings of Google Analytics and analyze the results Take your ideas all the way to your customer's plate using the top serverless cloud providers Who This Book Is For Those with some programming experience with Python, code editing, and access to an interpreter in working order. The book is geared

toward entrepreneurs who want to get their ideas onto the web without breaking the bank, small companies without an IT staff, students wanting exposure and training, and for all data science professionals ready to take things to the next level.

The aim of the book is to provide latest research findings, innovative research results, methods and development techniques from both theoretical and practical perspectives related to the emerging areas of Web Computing, Intelligent Systems and Internet Computing. As the Web has become a major source of information, techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play key roles in many of today's prominent Web applications such as e-commerce and computer security. Moreover, the outcome of Web services delivers a new platform for enabling service-oriented systems. The emergence of large scale distributed computing paradigms, such as Cloud Computing and Mobile Computing Systems, has opened many opportunities for collaboration services, which are at the core of any Information System. Artificial Intelligence (AI) is an area of computer science that build intelligent systems and algorithms that work and react like humans. The AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning. They have the potential to become enabling technologies for the future intelligent networks. Recent research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences are very important for the future development and innovation of Web and Internet applications. Unleash the capabilities of Power Virtual Agents to provide actionable insights to your customers and employees using automated chatbot solutions Key Features Provide instant customer support on your webpages using Power Virtual Agents Discover tips and techniques for the governance, administration, and deployment of chatbots Build conversational solutions for your web apps, public portals, and Teams environment Book Description Power Virtual Agents is a set of technologies released under the Power Platform umbrella by Microsoft. It allows non-developers to create solutions to automate customer interactions and provide services using a conversational interface, thus relieving the pressure on front-line staff providing this kind of support. Empowering Organizations with Power Virtual Agents is a guide to building chatbots that can be deployed to handle front desk services without having to write code. The book takes a scenario-based approach to implementing bot services and automation to serve employees in the organization and external customers. You will uncover the features available in Power Virtual Agents for creating bots that can be integrated into an organization's public site as well as specific web pages. Next, you will understand how to build bots and integrate them within the Teams environment for internal users. As you progress, you will explore complete examples for implementing automated agents (bots) that can be deployed on sites for interacting with external customers. By the end of this Power Virtual Agents chatbot book, you will have implemented several scenarios to serve external client requests for information, created scenarios to help internal users retrieve relevant information, and processed these in an automated conversational manner. What you will learn Get to grips with Power Virtual Agents and understand the license requirement for using it Deploy bots on public websites or web pages Create conversational solutions for your organization using Microsoft Teams Explore best practices for governance that are essential for implementing Power Virtual Agents Explore different business scenarios for implementing Power Virtual Agents Understand the integration between Power Virtual Agents and Microsoft Power Platform Who this book is for This book is for organization representatives looking to automate processes, relieve the first-contact workload of their front-line agents, and provide actionable results to employees and customers. Business professionals, citizen developers, and functional consultants will also find this book helpful. Familiarity with the Modern Workplace and the Dynamics 365 family of products will be useful. Beginner-level knowledge of Power Platform and its main modules will assist with understanding the concepts covered in the book more effectively.

Build artificial intelligence (AI) powered voice and text conversational interfaces with Amazon Key Features Develop Alexa Skills to create a working voice user interface (VUI) Integrate Amazon Lex chatbots into Facebook, Slack, and text messages Learn to use AWS Lambda, Alexa Skills Kit, and Amazon Lex Book Description Have you ever wondered how Alexa apps are made, how voice-enabled technologies work, or how chatbots function? And why tech giants such as Amazon and Google are investing in voice technologies? A better question is: why should I start developing on these platforms? Hands-On Chatbot Development with Alexa Skills and Amazon Lex covers all features of the Alexa Skills kit with real-world examples that help you develop skills to integrate Echo and chatbots into Facebook, Slack, and Twilio with the Amazon Lex platform. The book starts with teaching you how to set up your local environment and AWS CLI so that you can automate the process of uploading AWS Lambda from your local machine. You will then learn to develop Alexa Skills and Lex chatbots using Lambda functions to control functionality. Once you've come to grips with this, you will learn to create increasingly complex chatbots, integrate Amazon S3, and change the way Alexa talks to the user. In the concluding chapters, we shift our focus to Amazon Lex and messaging chatbots. We will explore Alexa, learn about DynamoDB databases, and add cards to user conversations. By the end of this book, you will have explored a full set of technologies that will enable you to create your own voice and messaging chatbots using Amazon. What you will learn Create a development environment using Alexa Skills Kit, AWS CLI, and Node.js Build Alexa Skills and Lex chatbots from scratch Gain access to third-party APIs from your Alexa Skills and Lex chatbots Use AWS services such as Amazon S3 and DynamoDB to enhance the abilities of your Alexa Skills and Amazon Lex chatbots Publish a Lex chatbot to Facebook Messenger, Twilio SMS, and Slack Create a custom website for your Lex chatbots Develop your own skills for Alexa-enabled devices such as the Echo Who this book is for Hands-On Chatbot Development with Alexa Skills and Amazon Lex is for developers who are interested in building conversational bots and Alexa skills with Amazon. Prior experience with JavaScript programming is required.

Summary Natural Language Processing in Action is your guide to creating machines that understand human language using the power of Python with its ecosystem of packages dedicated to NLP and AI. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Recent advances in deep learning empower applications to understand text and speech with extreme accuracy. The result? Chatbots that can imitate real people, meaningful resume-to-job matches, superb predictive search, and automatically generated document summaries—all at a low cost. New techniques, along with accessible tools like Keras and TensorFlow, make professional-quality NLP easier than ever before. About the Book Natural Language Processing in Action is your guide to building machines that can read and interpret human language. In it, you'll use readily available Python packages to capture the meaning in text and react accordingly. The book expands traditional NLP approaches to include neural networks, modern deep learning algorithms, and generative techniques as you tackle real-world problems like extracting dates and names, composing text, and answering free-form questions. What's inside Some sentences in this book were written by NLP! Can you guess which ones? Working with Keras, TensorFlow, gensim, and scikit-learn Rule-based and data-based NLP Scalable pipelines About the Reader This book requires a basic understanding of deep learning and intermediate Python skills. About the Author Hobson Lane, Cole Howard, and Hannes Max Hapke are

experienced NLP engineers who use these techniques in production. Table of Contents PART 1 - WORDY MACHINES Packets of thought (NLP overview) Build your vocabulary (word tokenization) Math with words (TF-IDF vectors) Finding meaning in word counts (semantic analysis) PART 2 - DEEPER LEARNING (NEURAL NETWORKS) Baby steps with neural networks (perceptrons and backpropagation) Reasoning with word vectors (Word2vec) Getting words in order with convolutional neural networks (CNNs) Loopy (recurrent) neural networks (RNNs) Improving retention with long short-term memory networks Sequence-to-sequence models and attention PART 3 - GETTING REAL (REAL-WORLD NLP CHALLENGES) Information extraction (named entity extraction and question answering) Getting chatty (dialog engines) Scaling up (optimization, parallelization, and batch processing)

The LNCS 12115 constitutes the workshop papers which were held also online in conjunction with the 25th International Conference on Database Systems for Advanced Applications in September 2020. The complete conference includes 119 full papers presented together with 19 short papers plus 15 demo papers and 4 industrial papers in this volume were carefully reviewed and selected from a total of 487 submissions. DASFAA 2020 presents this year following five workshops: The 7th International Workshop on Big Data Management and Service (BDMS 2020) The 6th International Symposium on Semantic Computing and Personalization (SeCoP 2020) The 5th Big Data Quality Management (BDQM 2020) The 4th International Workshop on Graph Data Management and Analysis (GDMA 2020) The 1st International Workshop on Artificial Intelligence for Data Engineering (AIDE 2020)

A chatbot is expected to be capable of supporting a cohesive and coherent conversation and be knowledgeable, which makes it one of the most complex intelligent systems being designed nowadays. Designers have to learn to combine intuitive, explainable language understanding and reasoning approaches with high-performance statistical and deep learning technologies. Today, there are two popular paradigms for chatbot construction: 1. Build a bot platform with universal NLP and ML capabilities so that a bot developer for a particular enterprise, not being an expert, can populate it with training data; 2. Accumulate a huge set of training dialogue data, feed it to a deep learning network and expect the trained chatbot to automatically learn “how to chat”. Although these two approaches are reported to imitate some intelligent dialogues, both of them are unsuitable for enterprise chatbots, being unreliable and too brittle. The latter approach is based on a belief that some learning miracle will happen and a chatbot will start functioning without a thorough feature and domain engineering by an expert and interpretable dialogue management algorithms. Enterprise high-performance chatbots with extensive domain knowledge require a mix of statistical, inductive, deep machine learning and learning from the web, syntactic, semantic and discourse NLP, ontology-based reasoning and a state machine to control a dialogue. This book will provide a comprehensive source of algorithms and architectures for building chatbots for various domains based on the recent trends in computational linguistics and machine learning. The foci of this book are applications of discourse analysis in text relevant assessment, dialogue management and content generation, which help to overcome the limitations of platform-based and data driven-based approaches. Supplementary material and code is available at <https://github.com/bgalitsky/relevance-based-on-parse-trees>

Real-time conversations turn leads into customers Conversational Marketing is the definitive guide to generating better leads and closing more sales. Traditional sales and marketing methods have failed to keep pace with the way modern, internet-savvy consumers purchase goods and services. Modern messaging apps, which allow for real-time conversations and instant feedback, have transformed the way we interact in our personal and professional lives, yet most businesses still rely on 20th century technology to communicate with 21st century customers. Online forms, email inquiries, and follow-up sales calls don't provide the immediacy that modern consumers expect. Conversational marketing and sales are part of a new methodology centered around real-time, one-on-one conversations with customers via chatbots and messaging. By allowing your business to communicate with customers in real time—when it's most convenient for them—conversational marketing improves the customer experience, generates more leads, and helps you convert more leads into customers. Conversational Marketing pioneers David Cancel and Dave Gerhardt explain how to: Merge inbound and outbound tactics into a more productive dialog with customers Integrate conversational marketing techniques into your existing sales and marketing workflow Face-to-face meetings, phone calls, and email exchanges remain important to customer relations, but adding a layer of immediate, individual conversation drives the customer experience—and sales—sky-high.

Voice user interfaces (VUIs) are becoming all the rage today. But how do you build one that people can actually converse with? Whether you're designing a mobile app, a toy, or a device such as a home assistant, this practical book guides you through basic VUI design principles, helps you choose the right speech recognition engine, and shows you how to measure your VUI's performance and improve upon it. Author Cathy Pearl also takes product managers, UX designers, and VUI designers into advanced design topics that will help make your VUI not just functional, but great. Understand key VUI design concepts, including command-and-control and conversational systems Decide if you should use an avatar or other visual representation with your VUI Explore speech recognition technology and its impact on your design Take your VUI above and beyond the basic exchange of information Learn practical ways to test your VUI application with users Monitor your app and learn how to quickly improve performance Get real-world examples of VUIs for home assistants, smartwatches, and car systems

With so many flesh-and-blood humans needing support, digital assistants can offer a valuable service finding out what users need and improving the basic process of online data gathering. Building Chatbots with Microsoft Bot Framework and Node.js walks readers concept-by-concept through the process of building their own capable chatbot. With this in-depth, practical book readers learn the basics of chatbot design, development, and deployment by building a virtual health assistant. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

This book constitutes the proceedings of the 4th International Conference on Internet Science held in Thessaloniki, Greece, in November 2017. The 34 papers presented were carefully reviewed and selected for inclusion in this volume. They were organized in topical sections named: next generation community engagement; online policy, politics and co-creation; understanding and empowering digital citizens; data-driven research and design; social media and online interaction.

Build your own chatbot using Python and open source tools. This book begins with an introduction to chatbots where you will gain vital information on their architecture. You will then dive straight into natural language processing with the natural language toolkit (NLTK) for building a custom language processing platform for your chatbot. With this foundation, you will take a look at different natural language processing techniques so that you can choose the right one for you. The next stage is to learn to build a chatbot using the API.ai platform and define its intents and entities. During this example, you will learn to enable communication with your bot and also take a look at key points of its integration and deployment. The final chapter of Building Chatbots with Python teaches you how to build, train, and deploy your very own chatbot. Using open source libraries and machine learning techniques you will learn to predict conditions for your bot and develop a conversational agent as a web application. Finally you will deploy your chatbot on your own server with AWS. What You Will Learn Gain the basics of natural language processing using Python Collect data and train your data for the chatbot Build your chatbot from scratch as a web app Integrate your chatbots with Facebook, Slack, and Telegram Deploy chatbots on your own server Who This Book Is For Intermediate Python developers who have no idea about chatbots.

Developers with basic Python programming knowledge can also take advantage of the book.

Get hands-on experience building speedy mobile web apps with Sencha Touch 2.3, the user interface JavaScript framework built specifically for the mobile Web. With this book, you'll learn how to build a complete touch application, called Find a Cab, that has the look and feel of a native app on Android, iOS, Windows, and BlackBerry devices. In the process, you'll work with Sencha's model-view-controller

