

# Developing IoT Projects with ESP32

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Automate your home or business with inexpensive Wi-Fi devices

Vedat Ozan Oner

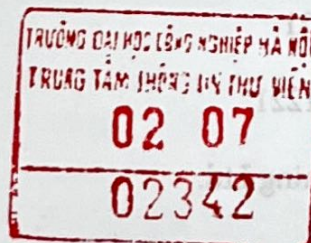




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Automate your home or business with inexpensive Wi-Fi devices

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## About the reviewers

Vedat Öner is a senior engineer with more than 15 years' experience of working in the field of IoT product development. He has experience in all the main areas of IoT product development, from hardware design to software development, and has undertaken projects in a variety of industries, including healthcare, manufacturing, and agriculture. He is currently working as a senior engineer at a tech company that integrates IoT devices into its products, and has been involved in the development of large-scale production IoT devices, where more than 70,000 sensors have been manufactured.

## About the author

Vedat Öner is a senior engineer with more than 15 years' experience of working in the field of IoT product development. He has experience in all the main areas of IoT product development, from hardware design to software development, and has undertaken projects in a variety of industries, including healthcare, manufacturing, and agriculture. He is currently working as a senior engineer at a tech company that integrates IoT devices into its products, and has been involved in the development of large-scale production IoT devices, where more than 70,000 sensors have been manufactured. He still lives there with his family.

*For my daughters, Melis and Selin, and my wife, Ferah; how lucky  
I am to have you!*

I would like to thank the author for allowing me to be a reviewer. I am a senior engineer with more than 15 years' experience of working in the field of IoT product development. He has experience in all the main areas of IoT product development, from hardware design to software development, and has undertaken projects in a variety of industries, including healthcare, manufacturing, and agriculture. He is currently working as a senior engineer at a tech company that integrates IoT devices into its products, and has been involved in the development of large-scale production IoT devices, where more than 70,000 sensors have been manufactured.



# Contributors

## About the author

**Vedat Ozan Oner** is an IoT product developer and software architect with a good blend of technical knowledge and experience. During his career, he participated in many IoT projects in different roles, which allowed him to see all aspects of developing successful IoT products in highly competitive markets. He holds a bachelor's degree in METU/computer engineering and holds several industry-recognized credentials and qualifications, including PMP®, ITIL®, and AWS Certified Developer.

Vedat started his limited company, Mevoo Ltd (<https://mevoo.co.uk>), in London in 2018 to provide consultancy services to his clients as well as develop his own IoT products. He still lives there with his family.

You can reach Vedat at <https://www.linkedin.com/in/vedatozanoner/>.

*Special thanks to the Packt team for asking me to write this book. It was a great opportunity for me to share and to learn. I believe I did a good job together with the Packt team and the reviewers, Carlos and Tarik, to present the subjects to you in the most effective way possible. Their valuable feedback and efforts made this book worth publishing.*

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## About the reviewers

**Carlos Bugs** is an electrical engineer with more than 15 years' experience of working with technology. He has experience in all the main stages of IoT product development, including preparation for large-scale production. He has undertaken projects in a variety of areas, including automotive, energy, instrumentation, medicine, and agriculture. Currently, he is the CTO of a tech company that integrates hardware projects (sensors, nodes, and gateways) with data science. He did the setup for large-scale production in China and thereafter in Brazil, where more than 70,000 sensors have been manufactured for big clients.

He has also undertaken many research projects and has won awards in Brazil and the United States. He can be reached on LinkedIn: <https://www.linkedin.com/in/carlos-bugs-6a272458/>

*I would like to thank God for allowing me to contribute to this amazing book. I also wish to thank my family (my wife and son) for being my inspiration and for being patient during the review process. Finally, I would like to thank the author, Vedat, Neil, and the entire Packt team, who worked so hard on this book.*

**Tarik Ceber** is currently employed as a hardware development engineer at TechSat GmbH in Germany. He started his career as a self-learner in 2005 as a C++ developer and worked on various unmanned aerial vehicle projects. Because of his passion for embedded systems and avionics, he has also developed electronic printed circuit boards, including flight control computers, inertial navigation systems, battery management systems, and avionics test equipment for a vast arsenal of aerial platforms (small fixed-wing UAVs, tactical UAVs, quadcopters, and eVTOLs). Aside from the aviation business, he has also participated in IoT projects and designed printed circuit boards for smart home appliances, including BLE-enabled smart meters and RGB color bulbs.

*I would like to thank the author for allowing me to be a technical reviewer of this informative and well-organized book, which truly fills a practice-oriented information source gap in the fast-growing IoT world.*



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## Preface

There is no single driving force behind IoT, but we can count several strong enablers, such as the emergence of inexpensive silicon chips available in large quantities, mobile technologies, and cloud computing, to name just a few. I think ESP32 has contributed to this on its own terms. When it was launched in 2016 by Espressif Systems, I was working for a smart home company as a technical product manager. We had seen the opportunity immediately – that this chip could cut the cost of our home gateway to a quarter of the one that we had! There was no other Wi-Fi system on a chip (SoC) on the market as a complete computing solution with that price tag. I know it is not possible to discuss everything that we can do with ESP32, but I believe you will find this book quite useful before starting your next IoT project with ESP32.

Besides as a profession, it is my hobby to build new IoT devices together with my daughter at home. I always love sharing my knowledge and experience with her and with people around me, as well as learning from them. I hope you enjoy reading this book and developing the projects together with me.