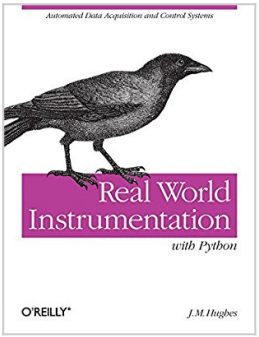

Real World Instrumentation with Python: Automated Data Acquisition and Control Systems

By J. M. Hughes

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Learn how to develop your own applications to monitor or control instrumentation hardware. Whether you need to acquire data from a device or automate its functions, this practical book shows you how to use Python's rapid development capabilities to build interfaces that include everything from software to wiring. You get step-by-step instructions, clear examples, and hands-on tips for interfacing a PC to a variety of devices.

Use the book's hardware survey to identify the interface type for your particular device, and then follow detailed examples to develop an interface with Python and C. Organized by interface type, data processing activities, and user interface implementations, this book is for anyone who works with instrumentation, robotics, data acquisition, or process control.

- Understand how to define the scope of an application and determine the algorithms necessary, and why it's important
- Learn how to use industry-standard interfaces such as RS-232, RS-485, and GPIB
- Create low-level extension modules in C to interface Python with a variety of hardware and test instruments
- Explore the console, curses, TkInter, and wxPython for graphical and text-based user interfaces
- Use open source software tools and libraries to reduce costs and avoid implementing functionality from scratch

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Editorial Review

About the Author

John M. Hughes (J. M. Hughes) is an embedded systems engineer and research computing specialist with over 30 years of experience in electronics, embedded systems and software, aerospace systems, and scientific applications programming. He was responsible for the surface imaging and camera control software on the Phoenix Mars Lander, and has worked on digital engine control systems for commercial and military aircraft, automated test systems, radio telescope data acquisition, and real-time adaptive optics controls for astronomy. John has been using Python for many years in a variety of applications, including the software for a multi-wavelength laser interferometer system for verifying the alignment of telescope mirror segments on the James Webb Space Telescope. He has used Python for imaging systems simulation and analysis at the University of Arizona, and is currently using it to control and monitor protein peptide synthesizers.

You can read more on John's technical blog here: crankycode.wordpress.com

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