Theo Hatzis

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# - Electronics Design and Test Engineer -

Versatile engineer with over 30 years of profound experience in the design of electronics and systems in various industries and senior roles. I am available on a project basis. My recent freelance projects include platform design verification for 3G and 4G modems, semiconductor validation and characterisation of DC/DC and PMICs, and development of embedded 60GHz radar sensors. I hold a master's in Computer Sciences with courses in real-time OS, computer architecture, embedded systems, control theory, sparing, formal methods, and robotics systems.

* Roles that combines hardware development or test with automation of measurement systems and test benches
* Languages include Python (10y), C# (10y), Teststand (5y), MATLAB (2y), and possibly several others
* A casual user of API and Test Frameworks, Build Tools, Toolchain, Jenkins, Docker and WSL2
* An already accomplished hardware developer can design bench test assemblies, jigs, and other supporting electronics for verification and validation testbench scenarios. I have designed extensively with Mentor Expedition, Protel (now Altium), OrCAD in several senior and lead hardware design engineer roles over the employed years
* Expertise in verification and validation of Interfaces, LTE Modems, PA, RFPMIC and Power Semiconductors
* Available, on a project basis, in Germany on a predominately onsite basis

# - Areas of Interest -

* Solid-state components verification and validation
  + Applications
  + Temperature characterisation
  + PMIC and DCDC Verification
  + Components verification for DCDC power and PMIC devices
  + Other Components verification/Post-Silicon - ADCs, DACs, MOSFETS, I/Fs, TRCVRs
  + Magnetic and Spectroscopic Gas Sensors
* Hardware development
  + Requirements capture, architecture, components technology selection
  + Schematic design capture of microprocessor applications board and interfaces
  + Simulations in SIMetrix and LTSPICE
  + Remedial and maintenance design. Issues resolution
  + Medical and Scientific Equipment design
  + Environmental performance. Approvals and Safety standards of IT and Medical Equipment
  + Sensors conditioning and interfaces
  + Automotive sensors
* Automation Measurementation
  + RF and PA measurements, RFPMU, Power and Battery consumption measurements
  + Sensors and Interfaces
  + Sensor testing - Magnetometers, Gas sensors, Radar sensors, FMCW and LiDAR
  + Automation software development and Test cases
  + EV Battery testing. Power electronics, Motor drives, Bridges, Inverters, DCDC Conversion
* Software
  + Python with Pandas/Numpy, C#, Pythonnet, Teststand, YAML, Events triggered bench forcing constellations with PyVISA.
  + C#, Python Jira, Git/Bitbucket, Docker, Jenkins, PyTest, Allure, Cmake, WSL2, Ubuntu and Tool-chains. MSBuild, Visual Studio, PyCharm. SW Build tools

# - Experience Areas -

## Electronics Design

* Concept design. Requirements analysis, design from requirements
* Design and Test Verification Documentation
* Board level 8/16/32 embedded microprocessor, analogue, interfaces, and power design
* Component technology selection
* Design and PCB Layout Reviews
* Product approvals EMV, CE, Sars, FCC, UL, Safety and Environmental performance
* Designs Verification and Validation documentation. Prototype and Module testing
* Maintaining and remedial design

## Semiconductors

* Fast Vin ramps, Vin glitch, Triangular loads, Triangular Vin measurements
* controlled 50ns trapezoids and traiangualar loads forcings
* Custom jig design, forcing conditioning of line steps and load steps
* Bench automation with Teststand, some LabVIEW, VISA, C#, Python API PyVISA
* design of high-speed current forcing dynamic test-loads
* Efficiency measurements
* Positive and negative inductor currents on single and Multiphase bucks
* Emissions and Spread spectrum modulation verification
* Validation on DCDC Startups and shutdowns Protections
* Temperature and characterisation and issues assessments
* High expertise in all automation measurements
* Improves quality of measurements for datasheet in industry

## Tools

* Schematic design, Mentor, OrCAD, Protel (Altium), PCB Floorplanning
* Visual Studio, VSC, PyCharm, Teststand, LabVIEW, GIT
* LTSPICE, SIMetrix/SIMPLIS, OrCAD, Protel (now Altium), Mentor Expedition, Cadence, PCB Floorplanning
* Visualisation tools in Spotfire, matplotlib and Seaborn
* JTAG, Lauterbach Power Trace32, I2C Analyser, Logic Analyser, Clocks Jitter, USB test
* Bench Automation with PyVISA and C#

## Other Experience

* Lab bench scripting in C#, Python, Testsand and some LabVIEW
* Basic CMake, Docker, Pytest, Allure, Jenkins, Jira, WSL2, Ubuntu, C#/.NET, GUI Test, Git/Bitbucket, YAML
* Test automation software development and scripting for bench measurements, data analysis and visualisation
* Python in LTSPICE simulation. (e.g. this CV), Markdown and XML
* Receiver, transmitter and PA chains, Synthesizers and DDS
* Office Excel and Word automation (.NET interop), Python DOCX, Assembly with YAML and Jinja2 templates
* Some non-agile, light software development with toolchain, build tools and Jenkins

# Training

* Courses in RF Circuit and System Design, TestStand, LabVIEW, EMI, ESD, Spectrum Analyzer, Allegro/Cadence, TIBCO Spotfire, MSc (distinction), BSc(Hons) and HNC(BTEC)

# - Projects -

Test and Verification Engineer for Radar Applications, Infineon Technologies AG, Oct 2020 – Mar 2021 [Hays]

* Software development, 60GHz Radar Sensors SDK and GUI tests

Validation Expert, Texas Instruments GmbH, June 2018 – June 2020 [Hays]

* Device characterization and Bench validation of DCDC converters

Application Engineer, Dialog Semiconductor GmbH, October 2017 – April 2018 [Hays]

* Mixed-signal PMIC Chipset DCDC Buck evaluation and documentation

Validation Engineer, TI Deutschland GmbH, August 2014 – September 2017 [Hays]

* Device Characterization and Bench validation of DCDC Buck, Buck-boost and Charge pump devices

Senior Baseband Engineer-Digital, Intel Mobile Communications GmbH, February 2011 – January 2014 [ERL]

* Intel XMM series XGOLD 2-4G modem reference designs verification

Senior Baseband Engineer-Digital, Infineon Comneon GmbH, August 2010 – February 2011 [ERL]

* Infineon XMM series XGOLD 2-4G modem reference designs verification

Hardware Consultant, ST Ericsson AT (Ericsson GmbH), Jan 2006 – Dec 2009 [Harvey Nash]

* Design and implementation of board-level power and distribution on early access FPGA based boards for 3G+ and 4G protocol stack development

Baseband Engineer, Texas Instruments A/S, Oct 2004 – Dec 2005 [WAC]

* 3G Mobile platforms designs verification. Validation test documentation and templates