Theo Hatzis, MSc

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Summary

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.

Note: I'm fully registered as a German Freelancer with a USt-IdNr. DE259921718. I'm Greek and British and also hold an eAT card

Skills and Interests

I'm interested in roles that combine hardware development with automation in measurement systems and test benches. Languages used include Python (10y), C# (10y), Teststand (5y), MATLAB (2y), and possibly several others. An already accomplished hardware developer carries out design test bench jigs, forcing units, and other hardware for verification and validation testbench scenarios of devices. I have designed extensively with Mentor Graphics Expedition, Protel (or Altium), OrCAD in several senior and lead hardware design engineer roles in my employment years. In addition, I have comprehensive test experience verifying and validating 3G/LTE Modems, Interfaces, RF, PA, RFPMIC, and Power Semiconductors. I have a robust automation first mindset, applying C#, PyVISA, YAML and Pandas libraries, and inside Teststand, significantly improving scripting comfort and code in managing the delivery of visualisations and test reports. I am interested in using test API, Frameworks, and hardware development of high-speed forcings jigs for semiconductor datasheet tests.

I'm not interested in full-on LabVIEW coding, except up to 50 VI's, preferring Teststand and Python, but also builds LabVIEW projects to .NET assemblies or C-dll, consuming the LabVIEW in Teststand, C# and Python via Pythonnet. Interested in PXI based measurements and Instrument Studio

Based on my past career and recent projects, I'm targeting roles where I think I'm particularly well suited, includes:

- *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 Toolchains. 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*