Krishna Mohan Thangarajah

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# Professional Summary

* 5+ years of experience in automotive systems
* 4+ years of research experience in FPGA implementation, localization, energy scavenging
* Hands on experience in Dspace HIL testing using Provetec and INCA experiment
* Hands on experience in Matlab/Simulink/Stateflow for development and testing
* Experience in vehicle and bench testing for power train and telematic systems
* Strong exposure to vector CANalyzer/CANoe, Matlab/Simulink/Stateflow, Multicomm, Qualcomm QXDM
* Experience systems development tools DOORS, DOORS NG
* Experience in testing TCU, PCM, ECM for various functionality
* Experience in Chrysler Diagnostic Tool and Ford diagnostic engineering tool
* Expert in debugging and trouble shooting vehicle and bench issues

# SKILLS

Technical: Matlab/Simulink/Stateflow, MEMS Coventerware, PSPICE, ModelSIM, CATIA, ALTERA Quartus, Cadence Virtuoso Schematic Editor, Cadence Virtuoso Analog Environment, Assembly, C/C++, VHDL/Verilog, ModelSim

Tool: ProveTec, CANalyser/CANoe, CDA, INCA, DC plot, DOORS, DOORS NG, DET, MultiComm, QXDM

# WORK EXPERIENCE:

**Continental (Through L&T), Dearborn, MI July 2018 to Dec 2020**

## Telematics Systems Test Engineer - Ford

* Performed vehicle level, bench, and TDK testing
* Design and implement test requirements for telematics features including ADAS
* Plan and Perform various levels of testing for software release cadence
* Tested the software for its synchronization, connectivity, EV, remote commands, and vehicle hotspot
* Perform root cause analysis by reproducing and analyzing issues including vehicle logs
* Provided technical support to test engineers
* Engaged in product improvement discussions with Ford and Tier1
* Utilized embedded flash programmers to update software in background mode (without vehicle communication)
* Captured logs with CANoe, MultiComm, QXDM depending on the issues

**FCA(Through TCS), Auburn Hills, MI April 2015 to April 2018**

## Powertrain Systems and Validation Engineer

* Performed vehicle testing, HIL testing for ECM and PCM
* Developed high level and low level requirements for regulations from CARB
* Designed and Developed Simulink/Stateflow system level model as per the requirement change and verified the software for its functionality
* Developed high level requirements from system level requirement for PMBD
* Developed control algorithm for requirement change and interacted with software engineers for its correct implementation
* Verified and Validated system requirements with HIL model using ProveTec for various vehicle thermal and management
* Updated and maintained the vehicle functions (VFs) for various systems.
* Graphically analyzed the signals from sensors and CAN buses using CANalyzer and log the data for system verification

**Research Assistant Jan 2008 to Jan 2014**

***University of Windsor, Windsor, Ontario***

* Researched for possible MEMS structures for power scavenging and optimize for frequency of operation
* Designed and developed the model for chip in PolyMumbs using Coventorware through CMC
* Implemented the new turbo decoding algorithm using Matlab/Simulink with fixed point and VHDL and implemented the normalized model
* Improved the localization efficiency using triangulation and phase extraction using received power and phase difference
* Prepared lab for implementing ALU in FPGA using VHDL and assisted students debugging VHDL codes
* Prepared lab for spectral analysis for periodic signal using digital oscilloscope

# KEY RESEARCH PROJECTS

## New MAP Algorithm Implementation in FPGA for turbo codes

### M.A.Sc Thesis

* + Developed a new algorithm and simulated in MATLAB for various frame sizes and SNRs for 4 states and 16 states turbo decoder
  + Implemented a novel architecture for the normalization module to reduce the area while reducing the critical path delay
  + Implemented a complete turbo decoder with new algorithm in FPGA using VHDL and achieved 60Mbps data rate
  + Simulated the hardware implementation using Altera ModelSim to verify the BER performance with Log-MAP algorithm

## Voice over WLAN without Base Station

### Engineering Capstone Project

* + Implemented and developed an Application layer for Voice protocol. That is a means for voice communication without the need of any backbone infrastructure
  + Independently developed software for call setup, routing algorithm, data transfer, broadcasting, voice to data, and software debugging
  + Developed multi-threading processes to monitor the broadcasting, table modification, available nodes, and routing using C programming
  + Designed the frame for broadcasting and transfer of data from the voice in real time in accordance with the TCP/IP using network programming

# EDUCATION

University of Windsor, Windsor, Ontario

**Master of Applied Science** August 2010

Electrical and Computer Engineering GPA: 12.75/13

**Bachelor of Applied Science (Honors)** August 2008

Electrical Engineering (Communications option) GPA: 12.56/13

***Publications:***

* *A novel simplified Log-MAP algorithm suitable for hardware implementation of turbo decoding DOI: 10.1109/CCECE.2011.6030705*
* *A PLL based readout and built-in self-test for MEMS sensors DOI: 10.1109/MWSCAS.2011.6026548*
* *A hybrid algorithm for range estimation in RFID systems DOI: 10.1109/ICECS.2012.6463511*
* *Power harvesting using tuned comb drive DOI:10.1109/ MWSCAS.2015.7282029*

**REFERENCES ARE AVAILABLE UPON REQUEST**