Ganindu Nanayakkara

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Objective Looking for new opportunities in autonomous vehicles/robotics research and development

Education B.S. in Mechatronics Engineering , Asian Institute of Technology, Thailand (July 2014).

Experience

Present : Autonomous Vehicle Navigation and Control Systems Development Engineer.
July 2017

- Member of the Autonomous Control System Team at **Aurrigo Driverless Technologies**
  https://aurrigo.com/
- Involved in Low Speed Autonomous Vehicle development.

Currently working on developing Navigation and Control systems, Bayesian Filters, ROS Drivers, test-level safety supervisor alertness and sensor state monitoring tools for autonomous vehicles.

Highlights: Control systems, Autonomous Local Navigation, Communications, Diagnostics, Testing and Development.

Past 1.2: Research Assistant: Vehicle development,
Nov 2015 - July 2017

- Member of the Team at **Microcab Industries**
  http://www.microcab.co.uk
- Involved in Electric, H2E Prototype vehicle development.

Worked on the development of Hydrogen Fuel Cell system state monitoring and diagnostics system. From concept, deign prototype to a design that was set to go on the whole fleet of SWARM Hydrogen Fuel Cell Electric Vehicles. Worked on a Renault Twizy(For Coventry University Future Vehicle Laboratory) H2EV conversion by working out how the Twizy woked with it's powertrain. Did Battery testing and pack assembly for microcab prototype vehicles.

Highlights: VCU development, Embedded Systems, Simulation, Safety Cases.

Past 1.1: Research Assistant: Advanced Hybrid Powertrain Development,
Dec 2014 - July 2017

- Member of the Control and Sensor development team of the **GKN GyroDrive** a former **Williams Hybrid** prototype development.

Developed sensor solutions for a high speed KERS rotor that was being developed for commercial applications. An optimal method was purposed after modeling the required

behaviour and translating that to a prototype rig. Multiple methods including ones that does not require sensors at rotor level were considered.

Highlights: Motohawk Controller, Embedded Systems, Optimizing, Project work, Safety, Simulation, Testing, Smart sensor development, MKX Flywheel Energy Storage.

Trainee Engineer, Camoplast Solideal, Midigama, Sri Lanka (3m). Summer 2012

- Carried out preventive maintenance in the **Air Tyre** division.
- Did Troubleshooting in tyre curing oven lines and general **Air Tyre** machinery.
- Supervised the power line installment for a 6kV mixer from installing the Transformer to the installment of the machine.
- Supervised the installation of a refurbished roller mill control system.

Highlights: Co-operate environment, Working with technicians, On the spot troubleshooting, Project work, Factory safety, Leadership training program, Maintenance supervision, Parts ordering, Lean manufacturing, ISO standards.

Research Assistant, Mechatronics Laboratory, Chulalongkorn University, Thailand. Summer 2013

Mentored by: Dr. Ratchatin Chancharoen.

- Development of a FPGA/CPLD based controller for a FANUC™ robot.
- Assisting graduate students to set up ROS in the Asctec Pelican Quad.
- Partnered in the designing, building and deployment of a Mechanum driven robot for the Thailand automation challenge,(worked in a ROS integration, application of the kinect sensor,development of the safety override).
  Link to video: `http://www.youtube.com/watch?v=TE3Cqwn61A0`

Key areas: ROS, NI LabView®, Mecanum drive, Matlab®, Simulink®, Vision, PCL, Embedded systems, Microsoft® Kinect, FANUC™, 3D printing.

Capstone project **Development of a Reconfigurable Ledge Climber**

- Conceptualized, designed, developed and implemented two modules of the class, modular reconfigurable robots.
- Performed tasks of locomotion and ledge climbing.
- Analyzed the system response and behavioral characteristics and experimented on the performance and capabilities module wise.
- Experimented on multiple robot collaboration using the two modules to achieve the goals utilizing their capabilities and proved that the two robots can accomplish a task collaboratively which was previously impossible for a single module.
  Link to video: `http://www.youtube.com/watch?v=ny3iutQIQeU`

Key areas: Modular reconfigurable robotics, Multiple robot collaboration, DC motor control, Control algorithms, Embedded systems, RF communication.

Areas of Interest

- Control applications development, Autonomous navigation, Drones/UAVs, AI.
- Sensor fusion, LQE, Inter Process Communication(IPC).
- Cloud robotics.
- Distributed systems, Swarm robotics/Multiple robot collaboration, Visual servoing.
- Formula1 Racing, Formula e Racing, Electric Propulsion/Drivetrain.
- Rocketry, reusable space vehicles.
- Rapid prototyping.
- Exoskeletons.

Academic Projects *(other)*

- Obstacle avoiding robot,*(built from scratch).*
- Stair climbing robot,*remotely controlled, for praxis*
- Design of a skeet launcher, *Engineering mechanics.*
- Azimuth,*(pneumatic powered projectile)* servo controlled turret*, (targeting via vision, using the Matlab® image processing toolbox was developed separately later.)*
- Detection of a virtual object by the Willow Garage™ **PR2** robot in Gazebo(ROS) simulator *, Image processing class project.*
- Tracking objects using a native descriptor(designed by me) from the Microsoft® Kinect camera *, Machine vision class project.*
- Design, developed and simulation of a traffic light system using PLC. *Siemens S7.*
- Implementation of an Arduino ROS node *, AIT Vision and Graphics Laboratory.*
- Partnering in a project using the Parrot. ARdrone®(ROS) for Human Detection in disaster situations by Haar-like fearure detection *, AIT Vision and Graphics Laboratory.*

Honors and Awards

Complimentary award
The Mecanum project in support for the Chulalongkorn team in the internship period received the award from MTEC in the Thailand Automation Challenge.
December 2013

Sri Lanka Young Computer Scientist of the year award

- Silver award: National.
- Gold colours: Best Hardware Design, National.

Received this project for the High school project of a secure gate and a blender implemented using turbo pascal in the competition held by the ICT agency of Sri Lanka(**ICTA**) and the Sri Lanka Association for the Software Industry(**SLASI.**)

High School

St. Thomas' College Matara, Sri Lanka.

Sports

- Basketball: Represented the School $U17/U19$ Basketball teams and the Country for the AIT mini olympics.
- Chess: Represented the school chess team.
- Open water swimming*(Sea)*: as a hobby *Polhena Sri Lanka.*
- Surfing: as a hobby, *Waligama, Midigama Sri lanka.*
- Mountain Biking and Hiking.
- Canoeing.

Extra Curricular Activities

- Co-Founder of the S. Thomas' College Electronics Bureau for Innovative Solutions(**EBIS.**)
- Member of the 1st Matara Scout Platoon.
- Member of the Young Inventors Club.
- Captain of the High School debating team.
- Matlab® community fellow. `http://www.mathworks.com/matlabcentral/fileexchange/authors/455468`

High school Project

Experimental Project to determine the condition of the water using operational amplifiers and the $PIC16f877A$ microcontroller, electronics implementation.

familiar programing languages

- C/C++/MicroC®/ASM
- Matlab®/ Simulink®/Java/Python/Ladder/ LabView®

familiar Platforms and frameworks

- Windows®, Linux*(Ubuntu)*, OSX®, ROS, Matlab®, LabView®

Networking

- http://linkedin.com/in/ganindu
- https://twitter.com/ganindu
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Referees

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Declaration

I hereby certify that above particulars given are true and correct to my best knowledge.

Yours Sincerely,
Ganindu Nanayakkara