

DANIEL STONIER

Technology/Solutions Developer

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PROFILE

Contact Details

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(S) Australian, married with two children

Relevant Links

[LinkedIn](#)¹

[Github](#)²

[Blog - Yujin Robot](#)³

I enjoy solving problems that reside in the space where algorithms, programming and technology converge on the real world. The reward of watching technology come alive has had a great part in motivating the direction of my career towards a better understanding of how to make this happen. From a mathematics PhD to company as an algorithms developer, control engineer, software architect, product manager and innovation team lead, these have all contributed to understanding a significant part of the pipeline involved in the development of technology solutions. My role is more specifically suited to that of a lead software/technology developer with enough experience (and a significant interest) in product and business development to be able to participate in the bigger picture.

WORK HISTORY

Yujin Robot Co. Ltd (Seoul, Korea)

Innovation Team Co-Leader

2014-2016

Preparation - formed a proposal and iterated with company executives a restructured plan for Yujin's R&D
Integration - kickstarted the [innovation team](#)⁴ within the existing company infrastructure as a spin along
Human Resources - hiring for a varied team (hardware, software, business, korean & international) of 10-12 people
Business Ideation - work with a bizdev & product manager to finding new business and product ideas (e.g. [gocart](#)⁵)
Network - successfully connected with partners internationally and locally
Prototypes - manage rapid design and iteration on product ideas (seeing is believing!)
Shows & Field Tests - prepared systems for successful shows and field tests at client facilities
Software Vertical - design and co-ordinate software development from robot firmware through to server and web applications
Service Design - the technology voice in service design, also minimise complexity transmitted by software design to the user(s)
Quality Assurance - manage testing, continuous integration, deployment for generating reliable software
Collaborate - design, document, package, deliver and issue track the software for other teams and external partners
Navigation - rebuild a multi-floor navigation stack around Yujin's cleaning robot vision slam appropriate for a large logistics robot
Behaviour Trees - built a comprehensive implementation to handle decision making and logic inside the robot
ROSCON 2016 - local chair on the organising committee for the conference

Kobuki Project Lead

2012-2016

Goal - a robotics research platform to connect us with the intl dev. community to stimulate hiring & networking potential
Successes - thousands of users, increasing sales every year & thriving groups around spin-off platforms ([turtlebot](#)⁶, [deepbot](#) & [qbot](#))
Product Management - co-ordinate software, hardware, manufacturing and marketing for the product, [kobuki](#)⁷
Business - linked and launched kobuki in association with the [turtlebot](#) platform from OSRF

Lead Developer

2011-13

Lead Roles - co-ordinating and assisting where needed in Yujin's control team of approximately 10 people
Human Resources - hiring of new international engineers
New Projects - propose and work with local and international groups on various government funded projects
Algorithms - experimental design/testing of vision slam systems using nonlinear optimisation
Robotics in Concert - lead designer for a multirobot-device framework with OSRF, University of Texas et. al.
Software Manager - manage the open and closed source software (direction, development and quality control)
ROS Contributions - design & dev. of fundamental parts of the robot operating system (build, comms, platforms etc)
ROSCON - speaker at the annual ROS conferences
Academia - panel member for PhD defences both locally and internationally

Cleaning Robot Product Engineer

2009-10

Goal - work with our partner (Philips) and their management team to bring a vision-based robot to market
Successes - made it through the Philips project incubation trials (only 10% succeed) and delivered a product to market

¹<https://www.linkedin.com/in/daniel-stonier-95b37522>

²<https://github.com/stonier>

³<http://blog.yujinrobot.com>

⁴<http://inno.yujinrobot.com/>

⁵<http://gocart.yujinrobot.com/>

⁶<http://wiki.ros.org/Robots/TurtleBot>

⁷<http://kobuki.yujinrobot.com/>

Vision Slam - rebuild an experimental filtering algorithm from academia for vision based navigation with a focus on product
Stabilisation - ensure the automatic navigation is failure free - i.e. for all robots, all environments and all times of the day
Quality - worked with the Philips team to ensure market readiness (incl. 4 weeks of testing on site in the Netherlands)

Senior Control Engineer

2007-10

Control Software Management - integrate Yujin's control systems framework with the ROS framework

Control Software Development - visual servoing, manipulation, embedded systems, path planning, firmware motor systems

Korean Advanced Institute of Science and Technology [KAIST] (Daejeon, South Korea)

Postdoctoral Fellow (Robot Intelligence Lab)

2005-6

Research Areas - nonlinear control for omni-navigation, postural balance for humanoids and fuzzy path planning

Supervision - assisted lab members with theoretical mathematics and directly guided three postgrad students

OPEN SOURCE EXPERIENCE

- **Turtlebot**⁸ [2012-15] - responsible for & worked with Willow/OSRF to maintain & extend the turtlebot stack for ros groovy → indigo
- **RosJava**⁹ [2012-14] - worked with Damon Kohler to maintain & provide mature catkin/gradle/maven interfaces for indigo
- **Ros on Windows**¹⁰ [2010-12] - a minimal environment for company & factory software, also turned out to be useful for others
- **Catkin** [2010] - worked with devs at Willow/OSRF in the design phase to enable native cross-compilation/platform build tools.
- **Maintainer** [2008-16] - maintain a great many open source packages, examples include [sophus](#), [ecto](#), [kobuki](#), [turtlebot](#)...
- **Contributions** [2008-16] - patches for ros on arm, opencv, redmine and many robotics packages in the ros community
- **Projects** [2008-16] - [ecl](#) ([wiki](#)), [ecl](#) ([code](#)), [py_trees](#), [ros multimaster](#), [rocon tools](#), [mm](#) & many smaller packages for robotics

GENERAL SKILLS

- **Product Development** - have participated in various parts of the product pipeline for several projects
 - *GoCart* - prototype robotic platform and business solution for autonomous logistics.
 - *Kobuki* - a mobile research base.
 - *Turtlebot 2* - a mobile research platform and software environment.
 - *iClebo HomeRun* - a vision based cleaning robot developed in co-operation between Yujin & Philips.
- **Bridging Experimental to Product** - taking the new and shiny and incorporating it into product development.
 - *Research* - from academic paper to a level required for a robust product (vision slam for cleaning robots).
 - *Software Quality* - understanding where and how to draw the line between rapid delivery and long term sustainability
 - *Timing* - a good track record in selectively introducing or blocking new technologies which become vindicated later and effectively gave us a head start (Linux, Eigen, ROS, Turtlebot 2, Web Tools...).
- **Communication**
 - *C-Level* - worked with our c-level executives to integrate an 'innovation team' into a korean company.
 - *Inter-Company* - connections with groups at developer and executive level to form partnerships (Willow, OSRF, ScanBox, ...)
 - *Small Teams* - have worked in teams of up to 15 people with very mixed skills and cultures (typical robotics team).
- **Solutions**
 - *Nailing It* - never happy until I nail it, which lets me dig deeper until the solution is found, or the cause properly identified.
 - *Decision Making* - having both research and product background makes it easier to make judgement calls on direction.
- **Software**
 - *The Vertical* - developed, mentored and co-ordinated on software from firmware to the web, from design to deployment.
 - *Math Background* - easy to pick up new research from many fields and develop/co-ordinate theoretical development.
- **Languages**
 - *English* - native.
 - *Korean* - intermediate, currently living, studying and working in korea (9+years).

TECHNICAL SKILLS

- **C/C++** [expert] : mathematical algorithms, templates, metaprogramming, [qt](#), [library development](#), lower and higher level control (motor systems, navigation, manipulation), cross-compiling, bare metal embedded, opengl, many others.
- **Python** [expert] - scripts, graphical interfaces, libraries and frameworks, typically for robots and robot servers.
- **CMake** [expert] - used extensively in cross-platform projects and helped design ROS's [catkin](#) build environment.
- **Open Source** [expert] - developed, contributed to or co-maintained many [open source projects](#).
- **Issue Tracking & CI** [expert] - responsible for issue tracking/continuous integration/deployment operations (e.g. jenkins).

⁸<http://wiki.ros.org/Robots/TurtleBot>

⁹<http://wiki.ros.org/rosjava?distro=indigo>

¹⁰<https://github.com/ros-windows>

- **Linux** [expert] - custom embedded distros, real-time development, kernel building, server administration and even teaching my wife how to use her new shiny ubuntu desktop.
- **SysAdmin** [intermediate] - performed software related tasks for a company's needs (e.g. wiki, code services, etc).
- **Matlab Programming** [intermediate] - used while at university to prototype/simulate ideas.
- **Web Programming** [beginner] - supervisory experience of a web development team, enough to understand and appreciate differences in robot/web development (rest api's, javascript frameworks, docker).
- **Java/Android** [beginner] - java, gradle (e.g. [rosjava](#)) and simple android interfaces.
- **Document Editing** [anything] - latex, markdown, wikis, web presentations.

EDUCATION

University of Queensland (Brisbane, Australia)

Bachelor of Engineering

1991-94,2004

Electrical Engineering - first class honours.

Hons. Thesis - hardware/software implementation of a robotic vision system.

Bachelor of Science

1991-94

Mathematics - honours stream.

Deakin University (Melbourne, Australia)

Doctor of Philosophy (Mathematics)

1996-2002

Cocycle Theory - analysis of attractors in non-autonomous dynamical systems.

Non-Autonomous Stability - extending & integrating cocycle and classical theories.

Numerical Analysis - perturbations of autonomous systems to non-autonomous systems.

Central Queensland University (Rockhampton, Australia)

Bachelor of Science (Hons.)

1995

Mathematics - first class honours.

Hons. Thesis - sliding mode control of robotic manipulators.

Yeppoon State High School (Yeppoon, Australia)

Junior and Senior Dux

1988,1990

NON-CURRICULAR INTERESTS

- **Family** - married to a korean with two children, struggling to keep up with their korean!
- **Cycling** - these days just to maintain fitness and enjoy some MTB tours, previously road and track racing.
- **Running/Swimming** - again, also to just maintain fitness and my sanity from day to day.
- **Chess/Squash** - whenever I can find an opponent and whenever I can find the time!

REFERENCES

Sam Park (CTO, Yujin Robot)

Capacity Known - R&D Group Head, direct supervisor

Email - sampark@yujinrobot.com

Phone - +82-10-6295-3057

Marcus Liebhardt¹¹ (Innovation Team Co-Leader, Yujin Robot)

Capacity Known - Team Co-Leader

Email - ich@marcusliebhardt.de

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Brian Gerkey¹² (CEO, Open Source Robotics Foundation)

Capacity Known - Collaborative contact on various projects, co-organised ROSCon 2016

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Naveen Kuppaswamy¹³ (Robotics Researcher, TRI)

Capacity Known - Former student, long time personal acquaintance

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¹²<http://www.osrfoundation.org/team/brian-gerkey>

¹³<https://www.linkedin.com/in/naveen-kuppaswamy-5913808>