

# DANIEL STONIER

Technology/Solutions Developer

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## PROFILE

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### Contact Details

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(S) Australian, married with two children

### Relevant Links

[Portfolio](#)<sup>1</sup>  
[LinkedIn](#)<sup>2</sup>  
[Github](#)<sup>3</sup>  
[Blog - Yujin Robot](#)<sup>4</sup>

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 architect or developer with enough experience (and a significant interest) in product and business development to be able to participate in the bigger picture.

## WORK HISTORY

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### 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](#)<sup>5</sup> 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](#)<sup>6</sup>)  
*Networking* - successfully connected with partners internationally and locally  
*Prototypes* - 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](#)<sup>7</sup>, [deepbot](#) & [qbot](#))  
*Product Management* - co-ordinate software, hardware, manufacturing and marketing for the product, [kobuki](#)<sup>8</sup>  
*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

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<sup>1</sup><https://snorriheim.atlassian.net/wiki/display/snorri/Portfolio>

<sup>2</sup><https://www.linkedin.com/in/daniel-stonier-95b37522>

<sup>3</sup><https://github.com/stonier>

<sup>4</sup><http://blog.yujinrobot.com>

<sup>5</sup><http://inno.yujinrobot.com/>

<sup>6</sup><http://gocart.yujinrobot.com/>

<sup>7</sup><http://wiki.ros.org/Robots/TurtleBot>

<sup>8</sup><http://kobuki.yujinrobot.com/>

Successes - made it through the Philips project incubation trials (only 10% succeed) and delivered a product to market  
*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

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- **Turtlebot**<sup>9</sup> [2012-15] - responsible for & worked with Willow/OSRF to maintain & extend the turtlebot stack for ros groovy → indigo
- **RosJava**<sup>10</sup> [2012-14] - worked with Damon Kohler to maintain & provide mature catkin/gradle/maven interfaces for indigo
- **Ros on Windows**<sup>11</sup> [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

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- **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

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- **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](#).

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<sup>9</sup><http://wiki.ros.org/Robots/TurtleBot>

<sup>10</sup><http://wiki.ros.org/rosjava?distro=indigo>

<sup>11</sup><https://github.com/ros-windows>

- **Issue Tracking & CI** [*expert*] - responsible for issue tracking/continuous integration/deployment operations (e.g. jenkins).
- **Linux** [*expert*] - custom embedded distros, real-time development, kernel building, server administration and teaching my wife.
- **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

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**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

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- **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

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**Sam Park** (CTO, Yujin Robot)

*Capacity Known* - R&D Group Head, direct supervisor

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**Marcus Liebhardt**<sup>12</sup> (Innovation Team Co-Leader, Yujin Robot)

*Capacity Known* - Team Co-Leader

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**Brian Gerkey**<sup>13</sup> (CEO, Open Source Robotics Foundation)

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

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**Naveen Kuppuswamy**<sup>14</sup> (Robotics Researcher, TRI)

*Capacity Known* - Former student, long time personal acquaintance

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<sup>13</sup><http://www.osrfoundation.org/team/brian-gerkey>

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