Z. K. Johan Kok

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Education

Nanyang Technological University — Singapore

Bachelor of Science: Mechanical Engineering (Expected May 2018)
Masters: Technology Management (Expected May 2018)

- **Coursework:** Robotics and control systems, optimization, kinematics, solid mechanics, fluid mechanics, calculus, linear algebra, matrix theory, foundations of business
- **Study Abroad:** 12-month exchange year at the University of California, Berkeley
- **Honors:** Renaissance Engineering Scholar (2015), A* Star Scholar (2014), Max Lewis Scholar (2014)
- **GPA:** 4.94/5.00; Dean's List (2014, 2013)

Selected Projects

Oct 2015 to Present — **3D Printed Implants for Intracavitary Brachytherapy** — Berkeley, CA

Researcher, Berkeley Laboratory for Automation Science and Engineering

- Working with renowned roboticist Ken Goldberg and team in automation, supporting the development of a new approach to advanced cancer treatment, building on breakthroughs in 3D printing and needle motion control to precisely guide radioactive sources through printed channels
- Programmed a surgical robot interface in Python that has been widely used by the team in experiments

Sept 2015 to Present — **UC Berkeley Human Powered Vehicle Team** — Berkeley, CA

Computer-assisted design and computational analysis

- Joining an award-winning Berkeley team, focused on conceptualizing and manufacturing new forms of human powered transportation, working on an innovative shell design to minimize aerodynamic drag

Experience

June 2015 to Aug 2015 — **Singapore-MIT Alliance for Research and Technology (SMART)** — Singapore

SMART is an MIT postgraduate research institute, focused on advanced engineering technologies

Research Intern

- Working for Patrick Jaillet (MIT), one of the world's foremost experts on real-time data analysis, helped develop Singapore's first prototype for real-time traffic analysis through computer vision
- Developed graphical user interfaces to facilitate large-scale data collection by non-technical staff, and implemented image transformation and Gaussian process regression models to turn a high-definition traffic camera network into an automated accident and traffic detection engine

Sept 2014 to Aug 2015 — **Undergraduate Research on Campus (URECA), Nanyang Technological University** — Singapore

URECA is a selective research program open to the University's most able undergraduates

Researcher (Molecular Dynamics)

- Working closely with experts in nanoscale atomistic simulation, designed and carried out computational experiments examining tensile performance of single and double-walled nanotubes under various stress conditions. Synthesizing results in an academic paper, derived critical insights for optimal nanopolymers selection in industrial applications

May 2013 to Aug 2013 — **DSO National Laboratories** — Singapore

DSO is a Singapore-based research and development institution for defense-related technologies

Research Intern

- Deep-diving into signal processing literature, designed a custom noise-reduction algorithm to improve the precision and error-rate of sonar-based underwater location technologies
- Working with experts in finite element analysis and electromagnetic wave simulation, helped develop innovative computational models to improve the design and manufacture of high-performance lens for military applications

Additional

Publications: "Molecular dynamics simulation studies on the mechanical properties of different carbon nanotube systems," *Molecular Simulation* (2015; under peer review)
Volunteer experience: Mentor and tutor for juvenile offenders at the Singapore Boys' Home rehabilitation center (2014), Community outreach liaison for Deputy Prime Minister's Office (2013)
Extracurriculars: IMechE Speak Out for Engineering speech competition: 1st Runner-up (2015)
Computer skills: Python, Matlab, Java, C/C++, ROS, Arduino, LAMMPS, SolidWorks, MS Office
Languages: English (native), Mandarin (intermediate)