

# APOSTOLOS D. KOTTAS

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## SUMMARY

Electrical hardware design engineer who understands how hardware interfaces to high and low-level software. Experienced in the design of complex miniature electromechanical mobile devices.

## EDUCATION

University of Minnesota, Minneapolis

- Master of Science in Electrical Engineering June 2012  
**Thesis:** *Energy-Efficient Designs and Principles for Miniature Mobile Robotic Systems*
- Bachelor of Science in Mathematics May 2007
- Bachelor of Electrical Engineering Dec. 2006

## WORK EXPERIENCE

**Center for Distributed Robotics**

*http://distrob.cs.umn.edu*

Dec. 2003 – Aug. 2011

*Research Assistant*

- Collaborated with electrical, mechanical, and software engineers on a wide range of projects
- Integrated Li-ion smart-battery technology into 5 different (custom and commercial) robotic platforms
- Presented research projects to academic institutions, companies and other organizations
- Established a Robotics Technology Camp and outreach program for junior high-school students
- Led all electrical engineering efforts around several complex mobile robots, from concept to production - including architecture, design and manufacturing.
- Designed and realized all electronics onboard a mobile underwater robotic system to assess water contaminants - in response to the Deepwater Horizon Gulf Oil spill of Summer 2010
- Designed and developed a reconnaissance robotic platform, from which we formed ReconRobotics Corp.
- Authored journal articles, conference papers, and grants
- Interviewed, managed, and supervised new students

**ReconRobotics Corp.**

*www.reconrobotics.com*

Mar. 2005 – Jan. 2007

*Co-founder, Owner, Shareholder*

- Co-founded the company
- Wrote initial market assessment
- Designed, implemented, and optimized analog, digital and Radio Frequency (RF) circuits in the systems
- Conducted product demonstrations, and coordinated trade show exhibitions of products

## AWARDS

- Full graduate research assistantship funding [from Sept. 2007 to Aug. 2011]
- Graduate student essay scholarship awarded to attend the International Conference on Robotics and Automation in Japan [May 2009]
- Recipient of an Undergraduate Research Opportunity Program (UROP) grant [Apr. 2004]
- Awarded study abroad essay scholarship for a computer graphics global seminar in China [May 2004]

## SKILLS

### Proficiencies:

- Native in English and Greek (bilingual); basic French
- Electromechanical system development
- Experienced in the entire PCB realization process – from design and layout, to contracting designs to board houses (for fabrication) and assembly houses (for population)
- Board-level hardware/software design and prototyping of miniature embedded systems
- Mathematical problem formulation, modeling, electrical design optimization

### Hardware:

- AC/DC and DC/DC power converters, power distribution, and battery management circuits
- Over 5 years experience designing with Texas Instruments *bq*-family Li-ion fuel-gauges
- Analog and digital circuit design
- EMI and EMC analysis
- Multi-layer PCB layout
- SMBus and I<sup>2</sup>C communication interfacing to sensors and ICs
- Vector network analysis and impedance matching for RF and microwave systems
- Experience designing with Gumstix single-board computers

### Software Design:

- Proficient with Eagle EDA layout editor (7+ years experience)
- Well-versed in MATLAB programming, and most MathWorks Toolkits
- Agilent ADS EDA; ORCAD and PSPICE Cadence design suites
- Comfortable with C, C++, assembly, and Linux/UNIX

## SELECTED PUBLICATIONS

- [1.] Dhull, **Kottas**, Canelon, Dancs, Papanikolopoulos. “Aquapod: A Small Amphibious Robot with Sampling Capabilities.” Submitted and accepted to IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2012.
- [2.] **Kottas**, **Apostolos**, Drenner, Andrew, Papanikolopoulos, Nikolaos. “Intelligent Power Management: Promoting Power Efficiency in Teams of Mobile Robots.” Proceedings of the 2009 IEEE International Conference on Robotics and Automation, Kobe, Japan, May 2009.
- [3.] Burt, Drenner, Carlson, **Kottas**, and Papanikolopoulos. “Impact Orientation Invariant Robot Design: An Approach to Projectile Deployed Robotic Platforms.” Proceedings of the 2006 IEEE International Conference on Robotics and Automation, Orlando, FL, May 2006.