Karel Mundnich

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Education

2007–2013	**Electrical Engineer**, *Universidad de Chile*, Santiago, Chile. Graduated with maximum honors: GPA 6.6/7.0 Thesis: Early Detection of High Volatility Clusters using Particle Filters. Advisor: Marcos Orchard. URL: `http://tesis.uchile.cl/bitstream/handle/2250/115486/cf-mundnich_kb.pdf`
2007–2013	**B. Sc. in Electrical Engineer**, *Universidad de Chile*, Santiago, Chile. Graduated with honors: GPA 5.8/7.0

Working Experience

Vocational

Jun. 2014 – present	**Founder**, *Habitus*, Santiago, Chile. Start-up which aims to help workers enjoy better working routines by learning from their working patterns.
Apr. 2014 – May 2014	**Intern**, *Rankmi.com*, Santiago, Chile. Web development intern in Rankmi.com, a start-up which was part of Generation 9 of Start-Up Chile.
Oct. 2013 – Jan. 2014	**Software Engineer**, *Ingeniería y Geofísica Ltda.*, Santiago, Chile. Signal processing and software development of a low cost and open source ultrasonic anemometer. Website: https://code.google.com/p/uch-ultrasonic-anemometer/
Mar 2012 – Sep. 2013	**Research Assistant**, *Electrical Engineering Dept., University of Chile*. Volatility estimation of financial returns using Particle Filters, and detection of low-likelihood/high-risk events in financial time series. This Research Assistantship resulted in a published paper, an Engineering thesis and a currently submitted paper. Advisor: Dr. Marcos Orchard.
Jan. 2012 – Mar. 2012	**Engineering Intern**, *Infosys Technologies Ltd.*, Bangalore, India. During a 9-week long internship, I developed a modular framework for mitosis detection in histopathological images using MATLAB®.
Aug. 2011 – Dec. 2011	**Research Assistant**, *Electrical Engineering Dept., Universidad de Chile*. Exploration of the utility of Information Theory tools in statistical learning, applied to self-modeling robots. Advisors: Dr. Jorge Silva, M.Sc. Patricio Parada.
Mar. 2010 – Oct. 2011	**Research Assistant**, *Geophysics and Electrical Engineering Depts., Universidad de Chile*. Part of a team that built an Arduino-based open-hardware radiosonde for atmospheric sensing. The work and results can be read in [3].
Jan. 2010	**Intern**, *Associated Universities, Inc.*, San Pedro de Atacama, Chile. Worked in the Construction Department of ALMA (Atacama Large Millimeter/Sub-millimeter Array).

Miscellaneous

Aug. 2014 – present	**Contributor**, *Hawkmoth Magazine*, `http://hawkmoth.us`. Hawkmoth is a magazine about science and scientists. My roles in this job include writing and reviewing articles.

2008 – 2012	**Monitor**, *Public Relations Dept.*, Universidad de Chile.

Key roles of this job included:
- To give informative talks and tours to high school students and visitors,
- Assist in the organization of massive events,
- To lead groups of younger monitors.

Programming & Computer skills

Languages	Proficient: Python, MATLAB®; coursework: Java, C
Libraries & Tools	NumPy, SciPy, Matplotlib, LaTeX, Git
Relevant coursework	- Computing I (Java, MATLAB®) - Algorithms and Data Structures (Java) - Design and Programming Methodologies (Java) - Systems' Software Programming (C)

Publications

Peer-Reviewed

[1] Karel Mundnich and Marcos E. Orchard. Early Detection of High Volatility Clusters using Particle Filters. Submitted to Expert Systems with Applications, 2014.

[2] Karel Mundnich, Marcos E. Orchard, Jorge F. Silva, and Patricio Parada. Volatility Estimation of Financial Returns using Risk-Sensitive Particle Filters. *Studies in Informatics and Control*, 22(3):297–306, September 2013.

[3] Federico Flores, Roberto Rondanelli, Marcos Díaz, Richard Querel, Karel Mundnich, Luis Alberto Herrera, Daniel Pola, and Tomás Carricajo. The Life Cycle of a Radiosonde. *Bulletin of the American Meteorological Society*, 94(2):187–198, 2013.

Conference

[4] Karel Mundnich, Marcos E. Orchard, Jorge F. Silva, and Patricio Parada. Estimación de Volatilidad de Retornos Financieros mediante Filtro de Partículas Sensible al Riesgo. In *Congreso de la Asociación Chilena de Control Automático*, 2012.

Teaching Experience

2012	**Instructional Assistant**, Universidad de Chile.

Grading and assessment in Principles of Communications.

2010 – 2011	**Teaching Assistant**, Universidad de Chile.

Courses: Remote Atmospheric Sensor, Analog Electronic Circuits, Principles of Communications.

2009	**Teaching**, *Santiago College*.

Assisted a high school Senior in his preparation for the National Physics Olympiad.

Languages

Spanish	**Native**	
English	**Bilingual proficiency**	*IELTS (Academic, October 2014): 8.0/9.0*

Awards & Distinctions

2012   **Among top 10 papers**, *ACCA 2012*, Santiago, Chile.
The paper sent together with Professor Marcos E. Orchard to the Conference of the Chilean Automatic Control Association was selected among the 10 best papers of the conference, and was consequently published in an ISI article.

2010, 2012   **Outstanding Student Award**, *Universidad de Chile*, Santiago, Chile.
This distinction is given to the 6% of students with higher academic performance during a single year, considering all of the students of the class of a given year.

2008   **Best New Employee**, *Universidad de Chile*, Santiago, Chile.
Awarded for great performance as a new monitor at Difusión Colegios, Faculty of Physical and Mathematical Sciences, University of Chile.

2006   **Salutatorian Award**, *Santiago College*, Santiago, Chile.
Obtained the second best average during high school at Santiago College. GPA: 6.87/7.0.

2006   **Nomination to the Finer Humandkind Award**, *Santiago College*, Santiago, Chile.
The Finer Humankind Award is given to the high school senior who best gathers Santiago College's values.

Interests

Traveling   My traveling experience includes backpacking experiences in Chile, Central & Eastern Europe, and Southern Asia.

Photography   I deeply enjoy the connection between technology and art present in photography. Some of my best shots can be found in http://www.500px.com/kmundnic.

Sports   I currently enjoy biking, kundalini yoga, hiking and skiing. In the past, I was part of the football (soccer) and rugby teams at Santiago College. During my years as an Electrical Engineering undergrad, I actively participated in a football (soccer) team we named "El Divino Circuito" (The Divine Circuit).