

# Dr. Florian Knorn

**Email:** florian@knorn.org  
**Mobile:** +46 73 121-2210  
**Web:** www.florian-knorn.com

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## Qualifications

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| <b>2014</b> | <b>CCENT + CCNA (Routing &amp; Switching)</b>  |
| <b>2011</b> | <b>Doctor of Philosophy (PhD)</b><br>Thesis: "Topics in Cooperative Control". NUI Maynooth, Ireland.                             |
| <b>2006</b> | <b>Diplom (engineer)</b> with "Summa cum laude"<br>Systems Engineering and Technical Cybernetics. O.-v.-G. Universität, Germany. |
| <b>2001</b> | <b>Abitur and Baccalauréat</b><br>Specialisation: "Série S". Collège Français de Berlin, Germany.                                |

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## Skills

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| - Computer networking (Cisco, HP, Juniper, Extreme N.), Copper & Fiber infrastructure | - Languages: German, English & French spoken and written fluently, Swedish      |
| - Datacenter management   | - Proxmox, pfSense, Nagios/Icinga2, CEPH, ansible, glusterfs, HAProxy, git, SVN |
| - System administration   | - Matlab & Simulink   |
| - Linux, Mac OS, MS Windows   | - DraftSight / AutoCAD  |
| - Javascript, HTML, PHP, MySQL, Python  |   |

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## Employment History

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**2016 - present**                      **IP-Only AB (Uppsala, Sweden)**  
**Service Activation Specialist**

### Background

IP-Only is a leading provider of high-capacity fibre based data communication and datacenter services in Sweden. IP-Only owns and operates a high-capacity fibre network linking the Nordic capitals Stockholm, Oslo, Copenhagen and Helsinki as well as Sweden's second and third largest cities Gothenburg and Malmö. It is headquartered in Uppsala, Sweden. In addition, it owns a Metro Area Network (MAN) in Uppsala, and several data centres supporting co-location and cloud based product offerings to corporate clients. IP-Only was founded in 1999. In 2002, it acquired the Scandinavian fibre network of bankrupted KPNQwest. In total, approximately SEK 3 billion has been invested in IP-Only's network infrastructure over the years.

### **Key Responsibilities**

- Implementation and configuration of data services for IP-Only's business customers, including internet (IPv4 & IPv6) and ethernet services
- Network design and troubleshooting

**2014 - 2016**

**Borderlight AB (Uppsala, Sweden)  
System Developer**

### **Background**

Borderlight AB is a Swedish Telecom operator whose business idea is to design, deploy, operate and administer high-speed open network infrastructures for data communication that handle delay sensitive traffic and best-effort traffic in an efficient and secure manner while allowing different market players to share the secure, QoS assured infrastructure to increase their productivity and profitability. Today Borderlight works with business development and operations of Metro Networks incorporating a powerful service platform for full triple-play services (Internet, IP Telephony, IPTV and video-on-demand).

### **Key Responsibilities**

- Development of a new datacenter, from physical build, server hardware and electrical power systems to networking, virtualisation platforms, network storage, provisioning, configuration and also monitoring and instrumentation of various services and platforms
- Strong focus on high-availability and system redundancy
- Network security, firewalls and VPN services
- End-customer service during on-call periods, troubleshooting and fixing a broad range of networking and general infrastructure problems
- Support system development, in particular of a distributed monitoring system
- Web portal development
- Detailed documentation of all developments

**2012 - 2014**

**ResTech Pty Ltd (Newcastle, Australia)  
R&D Engineer**

### **Background**

ResTech is an Australian provider of research and development in electrical and electronic engineering to industry. ResTech is an avenue for industrial clients to access contemporary and fundamental knowledge to aid their research and development programs.

### **Key Responsibilities**

- Industrial research and development work
- Voltage regulation strategies in power distribution as well as mining electrical networks (a prototype system is currently being developed based off my research & simulation work)
- Panoramic photography based asset management systems (out of own initiative)
- Web front end development for a novel safety relay for variable speed drives (this product subsequently won the Australian Engineering Excellence Awards)
- Project management, high speed videography and data analysis for explosion tests (to simulate electrical arc faults)

**2011 - 2013** **Knorn Media (Maynooth, Ireland)**  
**Founder, Programmer**

**Background**

Knorn Media was a partnership started to offer various multimedia services in Ireland, including web- and mobile app development, photography, videography and sound recording services.

**Key Responsibilities**

To name a few, conception, production and maintenance of two iOS Apps (“The Maynooth App” & “Maynooth Emergency”), panoramic photography and virtual tour creation, event photography, recording of various live concerts, filming and production of academic seminars and summer school course material.

**2011 - 2012** **Hamilton Institute (Maynooth, Ireland)**  
**Post-Doc**

**Background**

The Hamilton Institute is a multi-disciplinary research centre within the National University of Ireland, Maynooth. The Institute seeks to provide a bridge between mathematics and its applications in information & communication technologies as well as biology.

**Key Responsibilities**

- Modelling of the dynamics of a suspension system for electric vehicles with in-wheel motor
- Tutoring and course support of a control theory lecture

**2007 - 2011** **Hamilton Institute (Maynooth, Ireland)**  
**PHD Student**

**Key Responsibilities**

- Four years research as part of Ph.D. programme, initially focussing on anomaly detection in software appliances (Prof. D. Leith), then theory of positive systems, cooperative control and constrained consensus in multi-agent systems (Prof. R. Shorten).
- Applications included wireless sensor networks and fleets of electric vehicles.
- Additional responsibilities included tutoring of control theory course; video and audio recording of the Institute's seminars and subsequent development of a video recording and processing workflow.
- Continuation of research and tutoring work as post-doc.

**2006 - 2007** **Technische Universität Berlin (Germany)**  
**Research Assistant**

**Background**

The Technische Universität Berlin is a research university located in Berlin, Germany and one of the largest and most prestigious research and education institutions in Germany.

**Key Responsibilities**

Six months of research and teaching assistance; tutoring of introductory control theory labs; design and development of a new institute homepage.

**2005 - 2006** **DaimlerChrysler Research & Technology (Böblingen, Germany)**  
**Internship**

**Background**

The (formerly) DaimlerChrysler Research & Technology centre in Böblingen, Germany, hosts a range of research groups for one of the world's largest and most innovative automotive companies, including the vehicle dynamics group.

**Key Responsibilities**

Six months internship working on the control of an active hydraulic suspension in Prof. Jens Kalkkuhl's vehicle system dynamics group, Daimler Research & Technology, Böblingen, Germany.

**2002 - 2004** **Max-Planck-Institut (Magdeburg, Germany)**  
**Research Assistant**

**Background:**

The institute in Magdeburg is the first institute of the Max Planck Society dedicated to the engineering sciences and is supposed to bridge the gap between basic research and industrial applications.

**Key Responsibilities:**

Two years as a research assistant working on educational control experiments like the "high wire walker" and the "inverted triple pendulum", Systems Theory group of Prof. J. Raisch, Max Planck Institute of Dynamics of Complex Technical Systems, Magdeburg, Germany

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## Patents

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**DE 10 2006 024 366.8: "Device for the control of the forward movement of a vehicle"**

Sole inventor of a concept that complements the traditional cruise control: Rather than keeping the car's speed constant (regardless of consumption), the invention keeps the gas consumption constant. This offers a number of advantages over the classic approach (in particular relating to fuel economy and driving comfort). Filed by Daimler Research & Technology.

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## Publications

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- J. Doyle, **F. Knorn**, D. O'Mahony, and R. Shorten. *Distributed Thermal Aware Load Balancing for Cooling of Modular Data Centres*. IET Control Theory & Applications, Volume 7, Issue 4, pp. 612 – 622, March 2013.
- **F. Knorn**, M. Corless, and R. Shorten. A Result on Implicit Consensus with Application to Emissions Control. CDC-ECC'11: Proceedings of the 50th IEEE Conference on Decision and Control, pp. 1299–1304, December 2011, Orlando, FL, USA.
- **F. Knorn**. *Topics in Cooperative Control*. Ph.D. Thesis, June 2011. Examiner: Prof. Abraham Berman, Technion, Israel.
- A. Zappavigna, T. Charalambous, **F. Knorn**. *Unconditional Stability of the Foschini-Miljanic Algorithm*. Automatica, Volume 48, Issue 1, pp. 219–224, January 2012.

- **F. Knorn**, M. Corless, and R. Shorten. *Results in Cooperative Control and Implicit Consensus*. International Journal of Control, Volume 84, Issue 3, pp.476–495, March 2011.
- **F. Knorn**, O. Mason, R. Shorten. *Applications of Linear Co-positive Lyapunov Functions for Switched Linear Positive Systems*. In POSTA'09: Third Multidisciplinary International Symposium on Positive Systems: Theory and Applications, pp. 331–338, September 2009, Valencia, Spain.
- **F. Knorn**, R. Stanojevic, M. Corless, and R. Shorten. *A Problem in Positive Systems Stability Arising in Topology Control*. In POSTA'09: Third Multidisciplinary International Symposium on Positive Systems: Theory and Applications, pp. 339–447, September 2009, Valencia, Spain.
- **F. Knorn**, O. Mason, R. Shorten. *On Linear Co-positive Lyapunov Functions for Sets of Linear Positive Systems*. Automatica, Volume 45, Issue 8, pp. 1943–1947, August 2009.
- **F. Knorn**, R. Stanojevic, M. Corless, and R. Shorten. *A Framework for Decentralised Feedback Connectivity Control with Application to Sensor Networks*. International Journal of Control, Volume 82, Issue 11, pp. 2095–2114, November 2009.
- **F. Knorn**, D. Leith. *Adaptive Kalman Filtering for Anomaly Detection in Software Appliances*. In Proc. 2008 INFOCOM Workshop on Automated Network Management (ANM), Phoenix, AZ, USA.
- **F. Knorn**, D. Leith. *Realtime Anomaly Detection in Software Appliances*. Proc. NIPS Workshop on Statistical Learning Techniques for Solving Systems Problems (MLSys), December 2007, Whistler, Canada.
- **F. Knorn**. *Modelling and Control of an Active Hydropneumatic Suspension*. Technical report, April 2006, Böblingen, Germany.

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## Referees

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Available on request.

**F. Knorn**

Florian Knorn  
May 2016