

# Jem Berkes

416-477-1527 • www.berkes.ca • [jem@berkes.ca](mailto:jem@berkes.ca)

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## WORK HISTORY:

### Senior Research Engineer

Galois, Inc. Portland, OR Feb 2014 – current

- Principal Investigator (PI) for DDoS Defense project funded by Department of Homeland Security
- Responsible for architecture and design of software systems
- Responsible for technology research, including speculative research and development (R&D)

### Design Engineer, Advanced

Altera Corporation Toronto, ON Jan 2010 – May 2012

Developed programmable chip (FPGA) products and analyzed measurement data such as power consumption, performance, and defects. Worked closely with other departments, particularly IC Design and Marketing, to support large cross-functional projects (28 nm). Acted as liaison between engineers and non-technical groups. Some experience in project management, defining and coordinating deliverables for a cross-functional project. Other key roles:

- Designing and implementing new systems for automated hardware testing
- Developing marketing collateral (slides/charts) for our group's lower-power technology leadership
- Distilling technical data from engineers and reporting the big picture in monthly reports
- Providing support to internal and external customers, first users of engineering samples (ES)
- Analyzing highly technical chip data and writing summaries and presentations for management

### NSERC Researcher (Masters student and Research Assistant)

University of Waterloo Waterloo, ON Sept 2005 – Feb 2008

Side channel attack research with RFID and smart cards. Discovered a new form of wireless security attack. Worked with Centre for Applied Cryptographic Research (CACR).

### Entrepreneur / small business owner

SysDesign Canada / Australia 1997 – 2010

Designed computer software (security and data management tools) for engineering and government customers. Performed sales, marketing, technical writing, and licensing of my intellectual property. Analyzed customer needs, did project management, and created whitepapers and documentation.

Customers include: Canadian Space Agency ; Florida State Government, Division of Emergency Management (letter of reference available) ; Haansoft (Korea). [NSERC writes about my business.](#)

## EDUCATION:

**Master of Applied Science in Electrical Engineering** University of Waterloo, ON 2005 – 2008

- NSERC Julie Payette Scholarship winner, offered to 24 top Masters candidates (6 in Engineering)
- NSERC André Hamer Prize. [See NSERC press release on my security research and entrepreneurship.](#)
- Research areas: signal analysis, cryptography, communication security, low-power hardware

**Bachelor of Science in Computer Engineering** University of Manitoba, MB 2000 – 2005

- Awarded University Gold Medal (highest standing in Engineering) and Medal in Computer Engineering
- Undergraduate minors in Management and Arts (Psychology); NSERC-funded laboratory researcher

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## **BUSINESS SKILLS:**

- Very good at simplifying complex technical issues and translating into plain language
- Excellent writing skills; experience writing for various target audiences including management
  - Monthly project status reports, whitepapers, product manuals ([example](#)), training manuals and guides
- Broad technical background, well-suited for analysis and cross-functional projects
- Strong verbal communication skills, and good in meetings
- Strong team skills; enjoy interdisciplinary environments; experienced traveller (with international experience)
- Expert in Microsoft Word, Excel, PowerPoint (and OpenOffice equivalents); some experience with Access

## **ENGINEERING SKILLS:**

- 5 years experience in automation including industrial automation, verification, and quality control
- Experience working with electronics circuits, schematics, various components, A/D conversion, PCB design
- 9 years experience with electronics lab equipment (oscilloscopes, interfacing/data acquisition, RF antennas)
- Signal interfaces: used and debugged CMOS/TTL-LS, LVDS, I2C bus, and other digital interfaces
- Electronics parts: experience with data sheets, specifications and selecting components for designs
- Communications signals (wired and wireless): capture and debug of packets, radio frequency modulation
- 3 years experience in hardware design for security, including crypto implementation, side-channel attacks
- Experience designing logic, test boards and peripheral electronics for Altera Cyclone IV, Stratix IV, Stratix V
- 2 years experience with semiconductor manufacturing and yield issues, including on-chip variation (OCV)
- Knowledge of signal integrity (eye diagrams, jitter, skew) and lab experience debugging DDR memory
- Hardware design (HDL) for FPGA, including high-speed serial interfaces (HSSI) and transceiver I/O's
- 3 years experience Verilog/VHDL design, Altera Quartus II (TimeQuest for timing analysis), and Xilinx ISE

## **SOFTWARE SKILLS:**

- Proficient in many languages: C, C++, x86 assembler, Java, Unix shell script, Python, TCL, Perl, BASIC
- Expert knowledge of network communication protocols & security: IPv4, TCP, SMTP, DNS, SSL/TLS
- Expertise in data processing, scripting, and efficient computation with large amounts of data
- Experience with many platforms, especially Linux, FreeBSD, DOS, Windows

## **AWARDS AND RESEARCH GRANTS:**

- University Gold Medal in Engineering and Medal in Computer Engineering, University of Manitoba (2005)
- NSERC Julie Payette scholarship winner, one of 6 “best PGS M candidates” in Engineering, all of Canada
- NSERC André Hamer prize winner, awarded to “most outstanding candidates” in graduate competition
- Finalist in 2001, 2002 UM/Management’s Student Entrepreneur of the Year Competition

## **HOBBIES AND RECREATION:**

- Bicycling, swimming (training with Manitoba Masters Aquatic Club), and surfing
- Beach volleyball (teams: university intramurals and Toronto Ashbridges League)
- Volunteered at Winnipeg Fringe Theatre Festival for several years
- World travel
- Debating (high school and university clubs)