

NICK CHERNY

212 EESB, University Park, PA 16802;
<http://microblog.routed.net;>

(814) 753-4730; nchernyy@psu.edu;

Objective

- Seeking an opportunity in a fast-paced environment which would allow me to demonstrate my mixed-signal hardware design, verification, and software development skills.

Education

- The Pennsylvania State University – State College, PA
Ph.D. Engineering Science – Electromagnetic Theory Specialization – 2010 (May, expected)
GPA: 3.98
- George Mason University – Fairfax, VA
B.S. Computer Engineering – 2004

Proficiencies

- Design of analog and digital circuits to process sub-100 μ V bio-sensor data
- x86, 8051, MSP430, 68k, MIPS, and PIC assembly languages
- Embedded debugging with JTAG
- FPGA synthesis and verification, with VHDL, using the Xilinx ISE
- Embedded/firmware development with Keil and IAR toolchains
- Multi-dimensional signal processing and simulation using MATLAB
- Data acquisition, analysis, and system control with LabVIEW
- Schematic capture, simulation, and PCB design using Cadence Orcad suite
- Analog circuit rapid prototyping, verification, and performance analysis; SPICE simulation
- Solid design employing AutoCAD and Rhino3D
- Windows, Linux, FreeBSD, Solaris, IRIX, and OSX environments
- C/C++ in Visual Studio and gcc/gdb development environments
- Network programming (socket/stream), serial protocols
- Massively-parallel signal processing using NVidia CUDA/GPU computing
- PHP, Perl, SQL and various shell scripting on Unix/Linux systems

Distinctions

- Dr. Sabih and Mrs. Güler Hayek Graduate scholarship winner (2007)
- Engineering Science and Mechanics Exhibition 1st place (2010), runner-up (2008,2007)
- TBII engineering honor society member, former web-development officer

Professional Experience

- **Center for Neural Engineering**—State College, PA
Graduate Research Assistant: 2004–present
 - Integrated analog front-ends, DSP, digital-control and PC-based data acquisition to facilitate concurrent neurological recording during ongoing electrical stimulation.
 - Developed novel time and frequency domain signal processing techniques and their implementation using MATLAB and LabVIEW.
 - Constructed a feedback-controlled electrochemical deposition system of iridium-oxide thin films consisting of custom electronics and all necessary PC-based software.
 - Designed and verified mission-critical circuits involving animal-model epilepsy research.
 - Created printed circuit boards and systems to operate in hostile environments (liquid/solvent exposure, vibration, temperature variations).
- **Private Engineering Consulting**—Various Locations
Consultant: 2002–present
 - Designed complete analog, digital, and mixed-signal circuits using microcontrollers and Xilinx/Actel FPGAs.
 - Employed RS-232, SPI, i2c and Ethernet communication protocols.
 - Effectively used EEPROM/NVRAM, EPROM, SRAM and DDR1/2 memory technologies.
 - Assisted with circuit bring-up and debugging using standard equipment and JTAG.
 - Performed system development, modeling, and control using various assembly languages, C/C++, MATLAB, LabVIEW, SQL, and scripting languages.
 - Network engineering using a broad range of Windows, UNIX/Linux, Cisco and VMWare technologies.
- **Center for Neural Dynamics**—Fairfax, VA
Undergraduate Research Assistant: 2003–2004
 - Designed a complete set of novel instrumentation for chronic neurological recording in freely-behaving animals using custom amplifiers, digital control, and PC-based data acquisition.
- **Dataprise Inc.**—Rockville, MD
Senior Network Engineer: 1999–2001
 - Carried out on-site installation of and upper-tier support for Cisco-brand network equipment and Linux-based embedded system development.
- **Sysnet Inc.**—Silver Spring, MD
Network Engineer: 1998–1999
 - Maintained core infrastructure for a medium-sized internet service provider consisting of BSD UNIX servers and various network equipment.

Publications

- Sunderam S, **Chernyy N**, Peixoto N, Mason JP, Weinstein SL, Schiff SJ, Gluckman BJ. *Seizure entrainment with polarizing low frequency electric fields in a chronic animal epilepsy model* J Neural Engineering. 2009
- **Chernyy N**, Schiff SJ, Gluckman BJ. *Time dependence of stimulation/recording-artifact transfer function estimates for neural interface systems* Conf Proc IEEE Eng Med Biol Soc. 2009;1:1380-3
- **Chernyy N**, Schiff SJ, Gluckman BJ. *Multi-taper transfer function estimation for stimulation artifact removal from neural recordings* Conf Proc IEEE Eng Med Biol Soc. 2008;1:2772-6
- Sunderam S, **Chernyy N**, Peixoto N, Mason JP, Weinstein SL, Schiff SJ, Gluckman BJ. *Improved sleep-wake and behavior discrimination using MEMS accelerometers.* J Neurosci Methods. 2007 Jul 30;163(2):373-83. 2007 Mar 15.
- Sunderam S, **Chernyy N**, Mason J, Peixoto N, Weinstein SL, Schiff SJ, Gluckman BJ. *Seizure modulation with applied electric fields in chronically implanted animals.* Conf Proc IEEE Eng Med Biol Soc. 2006;1:1612-5

Presentations

- **Chernyy N**, Sunderam S, Mason J, Weinstein SL, Schiff SJ, Gluckman BJ. *Multi-taper spectral analysis of stimulation artifact and epileptiform seizure entrainment data* American Epilepsy Society Meeting, (Abst. 3.165;) , 2007
- Sunderam S, **Chernyy N**, Mason J, Weinstein SL, Schiff SJ, Gluckman BJ. *A Markov-source model for seizure progression* American Epilepsy Society Meeting, (Abst. C.14;) , 2007
- **Chernyy N**, Sunderam S, Mason J, Peixoto N, Weinstein SL, Schiff SJ, Gluckman BJ. *Seizure modulation with applied electric fields in chronically implanted animals* American Epilepsy Society Meeting, (Abst. BS.17) , 2006
- **Chernyy N**, Peixoto N, Sunderam S, Mason J, Weinstein SL, Schiff SJ, Gluckman BJ. *Multichannel recording and isolated stimulation system for chronic electric field stimulation in rats.* Epilepsia 46 Suppl. 8 :283 (Abst. 3.028) , 2005
- Peixoto N, **Chernyy N**, Weinstein SL, Parekh R, Mason J, Schiff SJ, Gluckman BJ. *Electrochemical evaluation of electrodeposited iridium-oxide electrodes for low-frequency, non-pulsatile stimulation in chronically implanted animals* Epilepsia 46 Suppl. 8 :297 (Abst. 3.065) , 2005
- Sunderam S, Peixoto N, **Chernyy N**, Mason J, Weinstein SL, Schiff SJ, Gluckman BJ. *Sleep-wake stage and behavior discrimination in rats using a combination of EEG and head acceleration measurements* Epilepsia 46 Suppl. 8 :303 (Abst. 3.081) , 2005
- Berzhanskaya J, **Chernyy N**, Ziburkus J, Gluckman BJ, Schiff SJ. *Effect of electric fields on neural excitability in hippocampal CA1 in vitro* Society for Neuroscience Annual Meeting, 2005
- Peixoto N, Spencer RG, **Chernyy N**, Johnson K, Rubin G, Richardson K, Lovell R, Weinstein SL, Schiff SJ, Gluckman BJ. *Automated wake-sleep state discrimination in chronically implanted animals using electrophysiological and kinematic variables* American Epilepsy Society Meeting, 2004