Alexander Belsten
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belsten.github.io

Education

- **Rensselaer Polytechnic Institute** Troy, NY
  Computer and Systems Engineering; GPA: 3.76 *August 2016 - Present; Expected Graduation Date: December 2020*

Skills & Interests

- **Programming**: C/C++, Python, MATLAB
- **Technologies and Frameworks**: LaTeX, Tensorflow, LTspice, Visual Studio, git version control, openCV, CMake
- **Interests**: Neuroscience, ML, Statistical Modeling, Signal Processing

Work & Research Experience

- **National Center for Adaptive Neurotechnologies** Albany, NY
  Research Assistant *May 2018 - Present*
  - Improved and maintained BCI2000, a general purpose software for brain-computer interfacing
  - VA Research Without Compensation (WOC) appointee.
- **Fly-by-Feel Aerospace Systems Research** RPI, Troy NY
  Research Assistant *May 2020 - Present*
  - Aided Dr.Fotis Kopsaftopoulos in building statistical models and applying time series deep learning techniques to identify flight states of fly-by-feel aircraft.

Projects

- **Physical Interfaces for BCI2000**
  1. Developed C++ interface to automate switching of channels in cortical stimulation. Data analysis done to characterize stimulation and switching latency.
  2. Developed interface between BCI2000 and EGI amplifier to allow for closed loop feedback through transcranial stimulation.
  3. Implemented support for ActiCHamp Plus amplifier. Achieved average of 13ms latency.
  4. Telemetry-based CNS monitor and stimulator for closed loop interaction in small laboratory animals.
  5. Audio and video synchronization system. Aligned biosignals, audio and video data by accounting for latency with OpenCV and PortAudio. Added support to record from multiple webcams.
- **CNN/RNN for UCF11 Video Action Classification** Implemented CNN for spacial feature identification and RNN for temporal feature identification to do multi-class classification (11 classes) on 30 frame video sequences. Achieved accuracy of 1.0 on testing data (N=5,800) and 0.974 on training data (N=1,472).
- **CityCube** Webapp that gathers local data from Facebook, Twitter, and Google for the City of Schenectady by aggregating data. Finalist at the 2018 Hack Tech Valley event.

Papers

- Markus Adamek, Peter Brunner, **Hardware Abstraction to Facilitate the Dissemination and Validation of Electrophysiological Experiments**, Accepted one-page research paper and presentation by 42nd IEEE Engineering in Medicine and Biology Society, (EMBS), July 20-24, 2020, Montréal, Québec, Canada.

Leadership & Activities

- **Eta Kappa Nu, Honor Society for Electrical and Computer Engineers** - 2019 President - 2020 Webmaster
- **Undergraduate TA for Digital Control Systems (ECSE 4530)** - Fall 2020.
- **ALAC Mentor for Data Structures and Foundations of Computer Science** - Provide weekly individual instruction and guidance for students through tutoring and mentoring
- **Rensselaer Outing Club Wall Leader** - Organize and run climbing wall hours for Rensselaer community.
- **Member of Troy's Tech Valley Center of Gravity** - Woodworking and Machining Projects.

Honors

- Academic Honors: Dean's Honor List (6 semesters).
- Presentation: Discussed Framework of BCI2000 at RPI's Center for Open Source - Fall 2018