IAN PEITZSCH

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EDUCATION

Stony Brook University   *August 2017 - May 2021*
B.S. in Computer Science and Mathematics   GPA: 3.80

RESEARCH EXPERIENCE

Undergraduate Researcher, Stony Brook University   *August 2019 - Present*

- Worked with Jihu Mun and Dr. Kevin McDonnell to make STARS, a MIPS simulator.
- Wrote a lexer, parser, execution method, memory model, and debugger for STARS.

Undergraduate Researcher, Auburn University REU Site on Smart UAVs   *May 2019 - July 2019*

- Worked with Bruce A. Liboy, Dr. Saad Biaz, and Dr. Richard Chapman at the Auburn University REU Site on Smart UAVs.
- Developed, built, and tested a method of making 3D scans of environments using a UAV, IMU, Raspberry Pi, and a 2D LiDAR.
- Presented our work at Auburn University at the end of the REU.
- Wrote a technical report about our work.

Undergraduate Researcher, Stony Brook University   *October 2017 - May 2019*

- Worked with Dr. Mei Lin Chan and various other undergraduate researchers to develop 2 Android apps focused on health monitoring.
- Worked on creating a Bluetooth connection between the BME App and a custom-made health tracking wearable device.
- Presented a poster at the NEBEC 2018 conference about the BME App and the wearable device.
- Worked on the GUI design, database connection, and basic social media aspect of the Side By Side app.

TEACHING EXPERIENCE

Undergraduate Teaching Assistant, Stony Brook University   *August 2018 - May 2019*

- Assisted Dr. Kevin McDonnell with CSE 220: System Fundamentals.
- Helped teach students MIPS Assembly, computer architecture, and computer organization.
- Helped write and grade homework assignments, quizzes, and exams.
- Led weekly recitations, held weekly office hours, and answered students' question on online discussion boards.
- Wrote software to assist with grading assignments.

PROFESSIONAL EXPERIENCE

Hardware Emulation Intern, Universities Space Research Association   *May 2020 - July 2020*

- Worked with Michael Hoefler and Justin Morris, along with the rest of NASA's IV&V Facility's ITC team, to make software to support NASA missions.
- Created a GUI and made additions to QEMU to aid with monitoring testing simulations running ini QEMU.
- Wrote an instructional document on how to model PCI devices in QEMU.

PROJECTS

STARS: Stony Brook Assembler and Run-time Simulator

- The goal of this project is to make a MIPS assembler simulator to be used to teach MIPS assembly.

- The simulator is based on the MARS simulator and is made to do almost all the same use cases as the MARS simulator.

- The simulator is command-line based and includes a GDB inspired command line debugger.

- The simulator is coded in Python.

ITC QEMU GUI

- The goal of this project was to make a GUI that provides features to help with debugging while modeling devices in QEMU and to help with the general monitoring of QEMU.

- The GUI allows users to view memory contents, view the QEMU memory tree structure, view the currently executing assembly instruction, view the CPU register contents, view QEMU trace events, view QEMU HMP logs, and track how fast the simulation is executing as compared to real time.

- The GUI is intended to be used Fall 2020 to aid with testing simulations at Goddard Space Flight Center for the Nancy Grace Roman Space Telescope.

- The GUI is intended to be used by both IV&V and Goddard to aid with testing simulations for future missions.

- The GUI is coded in Python and the supporting QEMU infrastructure is coded in C++.

3D Mapping Using a UAV, an IMU, and a 2D LiDAR

- The goal of this project was to make 3D scans of environments using a 2D LiDAR, IMU, Raspberry Pi, and a UAV.

- The system used a RPLIDAR A1, 3DR IRIS UAV with a Pixhawk flight controller, and a Raspberry Pi 3B.

- The system worked by mounting the LiDAR sideways and then yawing the UAV 360° to get a full 3D scan of the environment.

- The system is coded in Python and C++.

Xacto Client Service

- The goal of this project was to make a remote-accessible server that basically functions as a hashmap.

- The program was made for the Stony Brook University's CSE320: System Fundamentals II course.

- The program is coded in C.

Side By Side

- The goal of this project was to make an Android app to help users visually track their weight loss progress.

- The app lets users take daily pictures of themselves, tag these pictures with various health metrics, and compare pictures and the corresponding health data with past pictures to track their weight loss.

- The app has a basic social media aspect to allow users to post their progress pictures.

- The app is coded in Java.

BME App

- The goal of this project was to make an Android app that would work in tandem with a wearable device to monitor a user's health and activity.

- The app connected with the wearable, health-monitoring device via Bluetooth Low Energy and then stored the health data in a database which can be accessed by the user's doctor.

- The app is coded in Java.

TECHNICAL REPORTS, CONFERENCE POSTERS, AND OTHER DOCUMENTS

1. Ian Peitzsch, "PCI Doc", NASA IV&V Facility Instructional Document, July 31, 2020.

2. Ian Peitzsch, Bruce Liboy, Saad Biaz, Richard Chapman, "3D Mapping Using a UAV, an IMU, and a 2D LiDAR", Auburn University, REU Site on Smart UAVs Technical Report, September 23, 2019.

3. Joochan Kim, Ian Peitzsch, Sakib Hoque, Chanpreet Singh, Liyun Li, Steven Crimarco, M. Ete Chan, "Utilizing Secured Online Database to Connect Physicians and Patients with Real-Time Fitness Tracker Linked Phone-App for Customized Obesity Treatment (Even Outside of Clinics)", NEBEC 2018, Drexel University, Phildelphia, PA, March 29, 2018.

4. Joochan Kim, Ian Peitzsch, Sakib Hoque, Chanpreet Singh, Liyun Li, Steven Crimarco, M. Ete Chan, "Utilizing Secured Online Database to Connect Physicians and Patients with Real-Time Fitness Tracker Linked Phone-App for Customized Obesity Treatment Even Outside of Clinics", NEBEC 2018, Drexel University, Phildelphia, PA, March 28, 2018.

AWARDS AND HONORS

TBΠ	*Inducted 2020*
Dean's List, Stony Brook University	*2017 - 2020*
Academic Achievement Award, Stony Brook University	*2019*
University Scholar, Stony Brook University	*2017 - Present*
Provostial Scholarship, Stony Brook University	*2017 - Present*
Commended Student, National Merit Scholarship Corporation	*2016*

EXTRA CURRICULAR ACTIVITIES

President, Stony Brook University Fencing Club *2020 - Present*

- Helped make COVID-19 safety guidelines for practices in the Fall 2020 semester.

- Helped teach new club members how to fence.

- Organized and led weekly meetings.

- Acted as the figurehead of the club.

Member, TBΠ *2020 - Present*
Secretary, Stony Brook University Fencing Club *2018 - 2020*

- Handled all communication for the club.

- Helped create a more gender-inclusive environment.

- Helped teach new club members how to fence.

General Body Member, Astronomy Club *2018 - Present*
General Body Member, Women in Computer Science *2017 - Present*
General Body Member, Stony Brook Computing Society *2017 - Present*