

Alex Vidal

1028 E. Kerr Ave. #206
Urbana, IL 61802

(714)-224-8508
alex.ds.vidal@gmail.com

Education

University of Illinois, Urbana-Champaign

PhD. In Computer Science (in progress)

August 2020 – Present

California State University, Fullerton

Bachelor of Science in Computer Science

January 2015-May 2020

Research Experience

Parasol

University of Illinois, Urbana-Champaign Department of Computer Science

Primary Investigator: Nancy Amato

- Worked with the Parasol Motion Planning Library (PMPL).

August 2020 – Present

Soft Living Active Matter Laboratory

California State University, Fullerton Department of Physics

Primary Investigator: Dr. Wylie Ahmed

- Captured microscopic images, performed graphical analysis, and extracted meaningful data to characterize current flows and path traces generated by biological and artificial microswimmers.
- Analyzed particulate motion of water in PDMS as it hardens to quantify the forces acting on individual particles.
- Wrote tools to calculate van Hove Correlations on arbitrary data sets.
- Synchronization and feature implementation of various instruments in the lab.
- Participated in the Center for the Physics of Biological Function summer program in 2019 at Princeton, studying optics, tagging, and computer vision amongst other things.

December 2017-May 2020

Collaborations:

- *Visualizing Fluid Physics of Microswimmers*. Al Bassri, Vidal, and Ahmed. Presented at American Physical Society March meeting, 2018.
- *Building a Microscope to Study Brownian Motion*. Seyforth, Vidal, and Ahmed. Presented at American Physical Society March meeting, 2018.

Work Experience

Technovative Applications

Radar Software Intern

Brea, CA

- Develop a Graphical User Interface using the WPF framework in the MVVM pattern.
- Maintain legacy software written using Java SDK 1.3.
- Wide usage of Virtual Machines to emulate network conditions, maintain legacy software, and expand tool usage.
- Synchronize Internal Communication Document between various programs during development.
- Trace routines and communications between multiple levels of the radar's systems.
- Enable remote debugging of high-performance SBC's via gdb-server setup.

March 2018 – October 2019

Theta Engineering

Embedded Systems Developer

- Design, implement, and maintained firmware projects for custom-made printed circuit boards
- Collaborate with multidisciplinary teams from project definition to delivery

August 2015-September 2017

Costa Mesa, CA

Alex Vidal

1028 E. Kerr Ave. #206
Urbana, IL 61802

(714)-224-8508
alex.ds.vidal@gmail.com

- Use finite state machines for a projects' architecture
- Create event-based systems and API for communication between state machines
- Research, design, implement, tune, and maintain algorithms including
 - Software low and high pass filters
 - Quadrature encoders
 - State-dependent noise rejection
 - Motor drivers
 - Climate control (temperature, humidity, circulation, etc.)
- Use embedded peripherals for high-precision timing, monitoring inputs, and driving outputs
- Design, build, and program testing circuits and rigs
- Debug projects in software and hardware using in-circuit debuggers, oscilloscopes, and multimeters
- Profile and tune various parts of code for size reduction or speed improvements
- Track progress for coworkers and customers
- Document results of research, development, and testing for future maintainers and for customer use

Work projects involved include:

- Leak detection by method of pressure monitoring and gas detection
- Smart cabinets and smart drawers used for medical purposes
- Multi-head, multi-material 3D printing in a controlled environment
- Gas concentration analysis via quantum cascading lasers

Security Clearance

Obtained clearance level of Secret in Spring of 2019. Valid until December of 2021.

Technical Skills

- Programming languages: C, C++, Python, LabView, Matlab, Java, C#, xaml
- IDE: Visual Studio, Matlab, LabView, emacs (together with gcc and gdb), MPLAB X (derivative of NetBeans for PIC devices), Arduino, Anaconda (with Spyder or PyCharm)
- Designing and implementing state machines and event-based systems in firmware (MCU RTOS)
- Knowledge of PIC and ARM architecture and peripherals, including ADC, PWM, i²c, compare and capture, interrupt vectors, and more
- Asynchronous code operation (interrupt-based and mainline code interaction)
- Understanding of digital circuits and basic analog circuits
- Experienced in reading schematics and creating wiring diagrams
- Proficient use of common electrical tools including oscilloscopes, multimeters, function generators and soldering irons
- Applying numerical methods in data capture, deriving conceptual models, and generating output
- Designing and building test platforms using arduinos, raspberry pis, integrated circuits, and discrete components
- Developing and coordinating test schemes using LabView
- Use linux regularly in development of programs including makefiles, shell scripts, git, grep, etc.
- Preparing and capturing microscopic images at high framerates
- Instrumentation and synchronization of lab equipment including high-speed camera, optical tweezer, and high-precision oscillating stage
- Graphical analysis tools such as FIJI(ImageJ) and VGGNet
- Generating technical documents in LaTeX
- Many levels of communication ranging from Multicast UDP to SPI.

Alex Vidal

1028 E. Kerr Ave. #206
Urbana, IL 61802

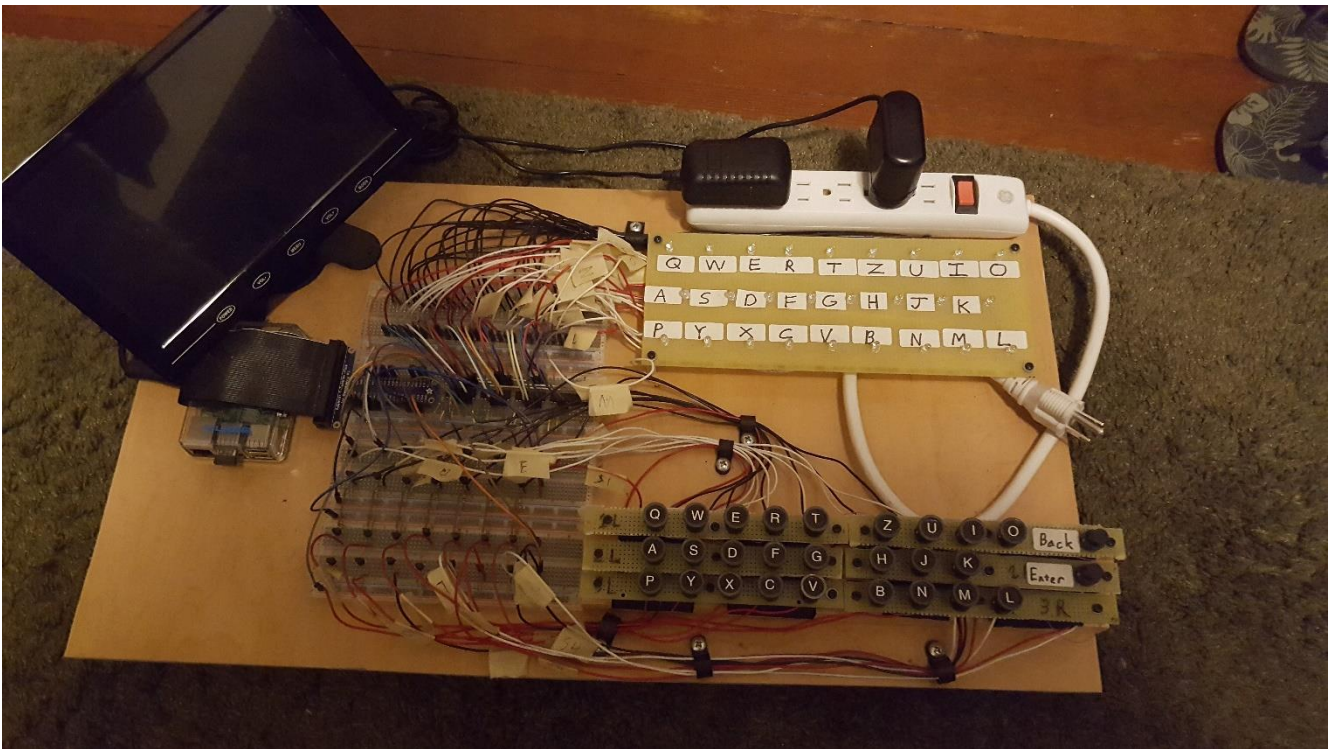
(714)-224-8508
alex.ds.vidal@gmail.com

- Regular use of a variety of Virtual Machines for development, target emulation, and tool usage
- Familiarity with PC to the extent of part purchasing, building, dual booting, VM, etc.
- Developing User Interfaces in the WPF framework using the MVVM pattern and in Java.
- Application of encapsulation, object-oriented programming, and profiling
- Maintaining versioning systems for multiple projects

Extracurricular Projects

Enigma Machine

- Created a machine to imitate the appearance and function of a World War II German encryption device
- Designed and built a signal matrix keyboard, LED banks driven by IO expanders, and interface to MCU
- Wrote electronics drivers in Python
- Implemented logic to encode text in one of 3 methods, rotation, Vignere cipher, and Enigma cipher
- Output various aspects of the process to screen for education/entertainment purposes



Languages

- Fluent in English
- Conversant in Portuguese