



# Matthew Krenik

## Engineer and Developer



US Citizen



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## About me

I am a recent Master's recipient from ETH Zurich with strong experience in hardware and software development and a theoretical background in data science and control systems. I'm passionate about designing innovative products at the intersection of hardware and software. In my free time, I enjoy playing jazz piano, basketball, mountain biking, hiking, rock climbing, and skiing.

## Skills

### Computer:

Machine learning, Embedded systems, Computer vision, IoT, Linux development, VIM, Git, MS Office  
*Advanced:* C, C++, MATLAB  
*Proficient:* Java, C# (Unity3D)  
*Familiar:* Python, Bash, HTML, CSS  
Javascript, LaTeX

### Electrical:

MCUs, Analog and Digital circuits, Bus Protocols (I2C, SPI, UART), Power electronics, Motor control, EDA Tools (OrCAD, Altium, Eagle), DSP, Comp. Architecture, Verilog, FPGAs

### Mechanical:

Rapid Prototyping, 3D modeling (Solidworks), FEM (COMSOL), MIG Welding, Wood/metal shop eqpmt.

See website and CV for more details

## education

- 2014-2016 **ETH Zurich** (ranked #9 worldwide by Times Higher Edu. 2016)  
M.Sc. in Robotics, Systems, and Controls  
GPA: 5.76 / 6.0 - Graduated with Highest Distinction
- 2011-2013 **UT Dallas**  
B.Sc. in Electrical Engineering  
GPA: 3.99 / 4.0 - Summa Cum Laude
- 2009-2011 **Texas Academy of Math and Science**  
Advanced early college program at University of North Texas  
GPA: 4.0 / 4.0

## work experience

- 2017 **iRobot - Associate Software Engineer** Bedford, MA  
Develop features, debug, and test firmware and software for all robots in development. Responsible for path planning algorithms, sensor calibration, internal state machines, factory builds and the robot UI
- 2012-2015 **Vertice Incorporated - Founder** Dallas, TX  
Invented a smart, position-aware hair clipper; filed several patents; developed prototypes, recruited and led student development teams; raised over \$60K; negotiated a license with a multinational corp.

## publications

- 2011-2015 Eight U.S. patent apps. on an autonomous hair clipper design.  
2014-2016 Three U.S. patent apps. on a robotic bed design  
2014 IEEE IECON "Improved TOF determination algorithms for robust..."  
2012 ACS NM "Effects of supercritical CO<sub>2</sub> activation on the structure..."

## awards

- 2015 Dropbox Prize (HackZurich); MixRadio Prize (HackJunction Helsinki)  
2013 Goldwater Fellowship (premier undergraduate research scholarship)  
2011-2015 McDermott Fellowship (full tuition + stipend at UT Dallas)  
2010-2012 NSF Research Experiences for Undergraduates Grant (awarded 3X)  
2011 Olympiad: Internat. Sustainability Finalist / Nat. Biology Semifinalist  
2010 Eagle Scout

## select projects

- 2016 Designed/constructed bed with embedded sensors/actuators; modeled bed/body system and analyzed optimal control techniques  
2015 Implemented visual, audio, and haptic feedback mechanisms on a real-walking VR system and performed a user study

## other experience

- 2016 **Recurse Center - Software Developer** New York City, NY  
Improved SW skills in C/C++ and ML through various CS projects
- 2015 **ABB - Software Development Intern** Ladenburg, Germany  
Developed four industrial use case demos on Oculus and Leap Motion
- 2014-2015 **JetBrains - Product Ambassador** Zurich, Switzerland  
Organized events and code challenges to promote software products
- 2012 **University of Maine - Research Assistant** Orono, ME  
Built a low cost harmonic radar system for detecting wood frogs
- 2011 **Universidade de São Paulo - Research Assistant** São Paulo, Brazil  
Synthesized and tested electrochemical windows of ionic liquids
- 2010 **Carnegie Mellon University - Research Assistant** Pittsburgh, PA  
Built camera system for detecting drug delivery using Marangoni Flow