Erik Z. S. Meike

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Employment/Paid Internships

PRENAV CORPORATION - SUMMER 2016
Worked on software development, hardware design, CAD for autonomous quadcopter monitoring startup. Tested, evaluated and recommended laser range finding systems for high-accuracy, realtime, 3D imaging. Reported directly to CTO.

QUICKLOGIC CORPORATION - SUMMER 2015
Designed, built, and tested location dead reckoning system built for S3 sensor hub platform for low power GPS location monitoring systems in wearables and mobile devices. Used sensor fusion, custom GPS commands, and data processing on FPGA systems. Built testing and simulation suite for system. Reported directly to CTO.

INTUIT CORPORATION - SUMMER 2014
Lead programmer creating drag and drop website to streamline call center on-boarding process. Programmatically parsed and validated data from Excel spreadsheet. Reformatted data into XML, using client side javascript and then sent REST API calls to backend service. My code is used as foundation for complete solution in use today saving millions of dollars annually.

NUEVA SCHOOL INTERNSHIP - SUMMER 2014
Installed Cisco network switches. Prepped MacBook Pros for over 600 students including replacing hard drives, loading software, debugging hardware problems, and replacing miscellaneous parts.

Passion Projects/Personal Research

LEATHERBACK TURTLE MONITORING - SUMMER 2015 - PRESENT
$5,500 grant from Gordon and Betty Moore Family Foundation
$1,500 grant from Youth Activity Fund Grant from the Explorers Club
With one other student, custom design, build, test, and manufacture 100 sensor packages for deployment with the Leatherback Trust in Costa Rica. Uses low power electronics with custom PCB and code.

SKYNOSE - QUADCOPTER AIR QUALITY MEASUREMENT - FALL 2014 - PRESENT
Built sensor platform for quadcopter to create 3d model of air pollution. Using Teensy 3.1 and many air quality sensors. Visualize data on website with Three.js and in Google Earth with KML.

MOTION ACTIVATED TIMELAPSE CAMERA - 2013-2014
Built a camera system to document the creation of artwork on school walls. Used a Raspberry Pi, and the accompanying camera. Designed and 3D printed a custom case to hold the camera on the ceiling. Used cron and rsync to automatically transfer the pictures to a server. Python and ImageMagick were used to analyze the pictures for movement and used ffmpeg to assemble the images into Apple ProRes and H.264 videos. Created an orthographic projection using images from multiple locations.

TRIBE AWESOME - MAY 2011 - PRESENT
Subject of video by Independent filmmaker Kirsten Dirksen
Co-founded a youth organization for researching and teaching new gardening techniques including hydroponics and aeroponics to the general public. Built and maintained http://tribeawesome.com/ using WordPress. Taught multiple 2 hour workshops encouraging students and adults to create gardens that use 98% less water than traditional growing techniques. Actively researching new sustainable growing techniques with solar power and sensors.

HAPPITOPIA MINECRAFT SERVER AND WEBSITE - SEPT 2011 - 2015
Created a Minecraft server, and accompanying website with player stats and a live map of the server. This is available at http://happitopia.net/. Supported active users for multiple years and many server upgrades. Created custom modifications in Java. Built custom, dynamic website and content management system in PHP, MySQL, HTML, Javascript, CSS that runs on an Apache web server on multiple self-maintained computers.

TWO-WHEELED, SELF BALANCING ROBOT PLATFORM WITH OPENCV - FEB 2012
1st place San Mateo County Science Fair, 7th Grade, Engineering, Feb 2012
Gave one hour-long lecture for Carnegie Melon TOCS lecture series

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Designed and built a two wheeled balancing robot platform based on Arduino Pro Mini and SparkFun 9 DOF sensors. This was the first phase of a project to create a robot which can autonomously follow hiking trails while recording its position, and taking 360° photos to create Google Street View-style immersive photos of hiking trails.

ROCKET LOGGER - OCT 2011

Designed and built a device to record the flight telemetry of a model rocket; mainly the apogee time and height, and the maximum acceleration of the rocket using 14 different sensors. The system was based on an Arduino Pro Mini with 3D accelerometer, gyro, magnetometer, pressure, temperature, humidity and light sensors connected via I2C & SPI. Recorded raw values as well as fused quaternion orientation.

INDUCTOR CHARACTERIZATION IN BOOST CONVERTERS

Silicon Boule Award, California State Science Fair, May 2011
1st place San Mateo County Science Fair, 6th Grade, Engineering, Feb 2011

Studied whether the Pulse Width Modulation frequency applied to an inductor (which has a resonant frequency) should be changed for a Maximum Power Point Tracking (MPPT) solar battery charger in order to increase efficiency.

FUEL CELL MAXIMUM POWER POINT TRACKING - MAY 2010

Found that it is as worthwhile to use MPPT on using fuel cells as it is for solar panels.

CHARACTERIZING SOLAR PANELS - FEB 2010

San Mateo County Science Fair, First time any 5th graders were recognized at the county level

Created accurate simulation of solar panels under non-ideal lighting conditions using LTSpice. Demonstrated Maximum Power Point (MPP) for test lighting conditions. Used a Sun SPOT to switch resistor array to measure solar panel output. Collected and analyzed millions of data points to show MPP under varying conditions.

XF-71 ELECTRIC CAR - SPRING 2008

1st place North Star Academy Inventor's Showcase
Shown at MakerFaire 2008

With two friends, designed from scratch, built and drove an electric car large enough for a driver and passenger. Built frame from wood and cardboard. Built two motor controllers to power and steer the car capable of carrying a driver and passenger at speeds that made my parents uncomfortable.

DESIGNED FIRST PRINTED CIRCUIT BOARD - MAR 2006 - AGE 6

Designed a simple circuit, hand laid out a circuit board, hand etched the PCB, and then soldered the components on, to make a working blinking light circuit.

Other Recognition & Leadership

FRC ROBOTICS - FALL 2013 - PRESENT

Control and Automation award at the Silicon Valley Regional Championships (2016)
Programming award at Chezy Champs (2016)
Quarterfinalist and alliance captain at Sacramento Regional Championship (2016)
Semifinalist at Silicon Valley Regional Championship (2016)
Entrepreneurship award at the Silicon Valley Regional Championships (2014)

Head of electronics of inaugural First Robotics Competition (FRC) team (Bot-Provoking, 4904) at The Nueva School. Responsible for all control electronics on new robotic platform. One of two key contributors to CAN Bus-based control system that won the Control and Automation award at the Silicon Valley Regional Championships and the Programming award at Chezy Champs.

NINTH PLACE (OF 650+ TEAMS) IN CAMSCTF INTERNATIONAL CRYPTOGRAPHIC PUZZLE COMPUTER CAPTURE THE FLAG COMPETITION - SPRING 2015

CO-FOUNDER: Programming Club, FRC Team 4904, TEDx Youth Event Org Club, Nueva Surfers tech support team.

GENERAL CLASS HAM RADIO LICENSE - SEPT 2010

TECHNICIAN CLASS HAM RADIO LICENSE - KI6TGN - SEPT 2008 - AGE 9

Skills

RELEVANT CLASSES: Machine Learning, Functional Programming, Calculus, Multivariable Calculus, Advanced Statistics, Applied Math (Control Theory), Advanced Physics, Modern Physics, Inorganic Chemistry, Neuroscience, Design Thinking, Design Engineering, The Elegant Logic of Computer Science, Robotics.

LANGUAGES: Python, Java, C, C++, PHP and others

CLIENT-SIDE/STAND-ALONE: Javascript, HTML, CSS, Android, WebGL, CUDA, KML

SERVER-SIDE: Unix command line, S3, EC2, Amazon Web Services, DigitalOcean, DreamHost, Flask, MySQL

SW TOOLS: NetBeans, Eclipse, Xcode, Processing, Mathematica, LTSpice,

EMBEDDED SYSTEMS: AVR, Arduino, Raspberry Pi, BeagleBone Black, Propeller, CAN Bus, I2C, SPI, 1-Wire, Serial

HW TOOLS: Schematic Capture, PCB Layout, (KiCAD) Oscilloscope, Logic Analyzer

FAB TOOLS: 3D printer, Laser cutter, CNC Mill, 3D Modeling tool (Fusion 360, SolidWorks)

Education

THE NUEVA SCHOOL - MEMBER OF FOUNDING CLASS OF 2017

HOME-SCHOOLED - 7TH - 8TH GRADE, SEPT 2011 - JUNE 2013

Interests

DIGITAL PHOTOGRAPHY AND FILMMAKING
45,000+ pictures, 1500+ videos.

CROSS COUNTRY - FALL 2014 - 2016
Member of JV WBAL league champion team (2014), JV/Var PSAL league champion team (2015-2016).

TRACK - SPRING 2014 - 2016
Member of JV WBAL league champion team (2014), JV/Var PSAL team (2015-2016).

NORCAL NOVICE MEN'S COMPETITIVE CREW TEAM 2013-2014
First place in two events, BIAC Fall regatta in Foster City
Second place at the Head of the Estuary regatta in Oakland
Ten regattas over 2013-2014 season. Eight man novice boat was within 2 seconds of qualifying for finals at the Southwest Regional Junior Championship in Sacramento.

7 years classical and jazz piano
Quadcopters are awesome!

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