HENRY BARROW, PH.D.

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EMPLOYMENT

Founding Partner & Chief Data Scientist **(Oct. 2017 - Present)**
Composite.ai, San Francisco, CA

Responsible for the design, backtesting, and implementation of several proprietary high-frequency cryptocurrency trading algorithms pertaining to inter-exchange arbitrage and automated asset positioning. Developed Composite.ai's core trading and asset transfer engines as robust finite state machines capable of efficiently interfacing with 15+ external cryptocurrency exchange APIs and WebSockets. Authored and maintain a suite of automated data mining and algorithm backtesting reports that consistently inform the Composite.ai team of significant market activity, outlier events, and updated trading performance predictions.

Relevant Skills: Docker, Python, R, Node.js, Solidity, Django, Rancher, PostgreSQL, React, D3js, git, machine learning, data mining, data visualization, technical analysis, smart contract authoring and review

Senior Hardware Engineer – CAD **(Jan. 2016 - Oct. 2017)**
Oracle, Processor Design Tools, Santa Clara, CA

Leverage data mining, machine learning and data visualization to develop and deliver software tools that assist Oracle circuit designers and computer architects in making critical engineering decisions that push the boundaries of high performance microprocessor design. Lead the development of several new tools that provide engineers with actionable insight into complex design problems. Collaborate with a talented team to provide significant feature enhancements to well-established and heavily used codebases.

Relevant Skills: Oracle DB, SQL, R, Python, C++, PHP, JavaScript, D3.js, git, TCAD, FinFET modeling, Machine Learning, Data Mining, Data Visualization , Library Characterization, Project Management

EDUCATION

Ph.D. in Electrical Engineering & Computer Sciences (EECS) **(2009 - 2015)**
University of California, Berkeley, CA
GPA: **3.77** Advisor: Prof. Clark Nguyen

Thesis Project: Harness the scaling benefits and performance advantages of micromechanical capacitive-gap transduced resonators with high Q-factors to realize tiny clock oscillators and tunable high-order coupled resonator filters. These devices enable reductions in both power and cost of next-generation electronic systems.

Relevant Areas of Knowledge and Interest: MEMS simulation and design, inertial sensing, fabrication process development, FEM techniques, network analysis, transducer modeling, filter design, system engineering, analog design, radio architectures, nanofabrication, advanced IC processing, resonant circuits, electromagnetics, communication systems, wireless sensor networks, solid mechanics, operation of semiconductor devices, thermal circuits, vacuum technology, noise, and microscopy.

B.S. in Electrical Engineering **(2005-2009)**
University of Arizona, Tucson, AZ
GPA: Electrical Engineering **4.00**, Overall Cumulative **3.93**

Undergraduate Research: Worked under Prof. William Ryan to demonstrate advanced channel coding techniques for high noise applications.

RELEVANT ENGINEERING EXPERIENCE

Graduate Student Instructor
UC Berkeley EECS Department

EE40—Electronic Circuit Design w/ Prof. Michel Maharbiz **(Spring 2015)**
Led two lab sessions focused on basic analog circuit design and microcontroller programming.

EE143—Microfabrication Technology w/ Prof. Ali Javey **(Spring 2014)**
Assisted two lab sessions in fabricating MOS transistors, wrote test questions, and held office hours.

EE140—Analog Integrated Circuits w/ Prof. Clark Nguyen **(Spring 2013)**
Created homework, supervised IC test lab, taught discussion sections, and held office hours.

EE245 – Introduction to MEMS Design w/ Prof. Clark Nguyen **(Fall 2011)**
Created homework problems and solutions, taught discussion sections, and held office hours.

MEMS Design Intern **(Summer 2014)**
Analog Devices, Wilmington, MA
Aided in the design and characterization of next generation commercial MEMS inertial sensors. Applied my experience with MEMS resonators and vacuum probe stations to optimize gyroscope *Q* vs. pressure measurements.

TECHNICAL SKILLS

Programming/Software: Oracle DB, SQL, R, Python, C++, PHP, JavaScript, Node.js, D3.js, SPICE, Coventorware, ANSYS, Advanced Design System, Cadence, MATLAB, Mathematica, Labview

Electrical Measurements: Automated control and data extraction from network analyzers, power supplies, spectrum analyzers, oscilloscopes, and temperature controllers via GPIB. Interfacing with chip scale devices through wire bonding or using a probe station. PCB design and in-house fabrication. Microwave signal routing using BNC and SMA connectors. NWA calibration and impedance testing.

Clean Room Processing Experience: Sputtering (AlN, Ni, Al, Mo, W), reactive ion etching (Si, SiO_2, Si_3N_4, diamond, AlN, Mo, W), DRIE, sputter etching, oxidation, annealing, CVD (Si, SiO_2, Si_3N_4), wet etching (HF, piranha, KOH, Si Etch, Ni Etch), metal liftoff, DUV lithography, CPD, profilometry, SEM, confocal microscopy, microspectrophotometry, and wafer cleavage.

Microscale Testing: Operation and repair of (vacuum) probe stations and micromanipulators, careful chip handling and storage, bonding devices to packages or circuit boards, in-house PCB design and fabrication, and automated data acquisition and system control.

PUBLICATIONS

1. H. G. Barrow and C. T.-C. Nguyen, "***A Protocol for Automated Passband Correction of High-Order Microelectromechanical Filters***," in Proceedings of the 2014 IEEE International Frequency Control Symposium, Taipei, Taiwan, 2014. PDF

2. H. G. Barrow, T. L. Naing, R. A. Schneider, T. O. Rocheleau, V. Yeh, Z. Ren, and C. T.-C. Nguyen, ***"A Real-Time 32.768-kHz Clock Oscillator Using a 0.0154-mm² Micromechanical Resonator Frequency-Setting Element,"*** in Proceedings of the 2012 IEEE International Frequency Control Symposium, Baltimore, MD, 2012. (Best Paper Finalist) PDF

3. W. C. Li, Y. Jiang, R. A. Schneider, H. G. Barrow, L. Lin, and C. T.-C. Nguyen, ***"Polysilicon-Filled Carbon Nanotube Grass Structural Material for Micromechanical Resonators,"*** in Micro Electro Mechanical Systems (MEMS), 2011 IEEE 24th International Conference on, Cancun, Mexico, 2011, pp. 477–480. PDF

REFERENCES AVAILABLE UPON REQUEST