Jeffrey L. Paulsen

Software Development, Data Analysis, and Physics

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I love creating measurement and analysis tools and putting them to practical application. I originally started developing MRI sensors at UC Berkeley due to its challenging mixture of basic physics, programming, instrument design, and data analysis problems. In industry, developing oil well sensors broadened this experience to obtaining results from real world datasets; and since moving to software engineering starting with Nest Labs, on programming, hardware, and manufacturing best practices.

Education

University of California, Berkeley, CA USA (**GPA:** 4.0)
Ph.D., Physical Chemistry, *Aug 2005 - Oct 2009*

- **Thesis:** "The Design and Application of an Adjustable NMR Sensor and The MRI Imaging of Flow in Microfluidics with Remote Detection."
- **Advisor:** Alexander Pines

Pennsylvania State University, State College, PA USA **(GPA:** 3.92, *with Honors in Chemistry***)**
BS, Mathematics and Chemistry, *2001 - 2005*

- **Thesis:** "Investigating a Monte Carlo Method for Simulating Gas Phase Reactions"

Experience

PreData: New York, NY **Platform Engineer**: Oct 2019 - Present
Software platform engineer focusing on systems performance optimization, customer metrics, and frontend testing. (Python, Django, pandas)

Zoox: Foster City, CA **Software Engineer**: Oct 2018 - Sept 2019
Ownership for the software related development, testing, and support of several networking and telecommunication systems for autonomous vehicles and for data ingest. (Python, C/C++, BASH)

Zenith at NEST (Google): Palo Alto, CA **Sensors Software Engineer:** *May 2017 – Oct 2018*
Software, firmware and tester development for sensor evaluation, product development, data analysis, and manufacturing utilizing a variety of software build, version control tools and languages (e.g. C/C++, Python, Obj-C).

Schlumberger-Doll Research, Boston, MA USA **Research Scientist,** *Dec 2009 – Sept 2015*
Research for Schlumberger's commercial NMR measurements to characterize oil reservoir rocks and fluids including laboratory techniques and sensors for use within oil wells.

- Prototyped new MR sensors and analysis methods for oil well applications, focusing on improving their speed, sensitivity, and interpretation.
- Developed new measurement applications and data analysis schemes.
  - Created novel diffusion based encoding schemes and analytical pulse sequence analysis tools.
  - Adapted compress sensing data reconstruction to speed up imaging measurements (4-16x).
  - Developed methods to infer oil composition and production potential.
- Collaborated with multiple academia labs in chemistry, physics and engineering to adapt tracers and techniques used in medical MRI, and create miniaturized single chip hardware.
- Mentored and trained 9 Interns
- 5 Patent Applications, +15 Publications

University of California, Berkeley, CA USA
Graduate Student Researcher, *Nov 2005 - Oct 2009*
Portable NMR sensors and the MRI imaging of microfluidics.

- Invented and built a portable NMR sensor with a large effective detection volume.
- Developed a method for high-resolution MRI flow imaging of microfluidic devices.

Skills

Programming: Python (Pandas / SciPy), C/C++, Matlab, BASH, R, Obj-C / Swift, git
Data: Signal Processing, Consistency Testing, Multi-dimensional data analysis, Inversion (Linear regression, Compressed Sensing, Fourier Analysis, decay spectra/Ill-Conditioned Linear systems)
R&D: Sensors, Physical Chemistry, Physics, NMR/MRI, TD-NMR, Comsol,

Honors

Giulio Cesare Borgia Prize, MRPM 12, *Wellington New Zealand, Feb. 2014*
Phi Beta Kappa*, 2004*
Mathematics Adv. Study Semesters Program, *Fall 2003*
Golden Key International Honors Society, *2003*

Publications

22+: for a complete list please see: *http://tinyurl.com/JLPaulsenArticles*