



K. L. Barry Fung, PhD

Sr. Systems/Integration Engineer, Medical Devices

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EXPERIENCE, RESEARCH AND DEVELOPMENT

IOTA BIOSCIENCES | SR. R&D SYSTEMS ENGINEER

Apr 2023 - Present | Alameda, CA, US

- Determines feasibility criteria for novel applications in ultrasound/implant systems.
- Designs, documents, simulates, and validates system/signal processing models.
- Develops FPGA (Xilinx, Lattice) DSP pipelines, regression testbenches, and user utilities.
- Coordinates technical efforts from contractors and provides feedback on designs.

TRIPLE RING TECHNOLOGIES | INTERN, SYSTEMS/IN VITRO DIAGNOSTICS

Jun - Aug 2022 | Newark, CA, US

- Developed TRT's microfluidic manufacturing capabilities with CNC micromilling.
- Designed three major capabilities (microfluidic fitting compatibility, valving and blister pack usage) that were frequently requested by clients
- Manufactured and integrated milled/laser cut designs with off the shelf parts for testable microfluidic chips.
- Designed and executed characterization experiments assessing device performance.
- Led weekly meetings presenting device designs and test results to senior engineers.

UNIVERSITY OF CALIFORNIA, BERKELEY | GRADUATE STUDENT RESEARCHER

Sep 2017 - Dec 2022 | Berkeley, CA, US

- Investigated superresolution and WBC tracking applications in magnetic particle imaging under Dr. Steven M. Conolly (3 papers - Nanotheranostics, Small Methods, Nano Letters)
- Integrated numerous subsystems to achieve experimental results, from in vivo work to device engineering
- Developed research protocols and pulse sequences investigating particle behaviour
- Designed, prototyped, and debugged investigative MPI scanners and devices

XLV DIAGNOSTICS | ENGINEERING INTERN

May 2015-May 2016, Jun-Aug 2017 | Toronto, Canada

- Performed circuit design, mechanical design, optical validation for prototyping an X-ray detector using novel X-ray light valve technology from UToronto
- Integrated and validated scanner readout performance with mechanical, electrical, optical, software, and semiconductor subsystems.
- Wrote and implemented engineering specs for electrical, optical, and software subsystems

SELECTED PUBLICATIONS AND PRESENTATIONS

KLB Fung, C Colson, J Bryan, C Saayujya, ... , SM Conolly

First superferromagnetic remanence characterization and scan optimization for super-resolution Magnetic Particle Imaging | NANO LETTERS (2023) [10.1021/ACS.NANOLETT.2C04404]

ZW Tay, S Savliwala, DW Hensley, KLB Fung, C Colson, ..., SM Conolly

Superferromagnetic Nanoparticles Enable Order-of-Magnitude Resolution & Sensitivity Gain in Magnetic Particle Imaging | SMALL METHODS (2021) [10.1002/SMTD.202100796]

P Chandrasekharan*, KLB Fung* (co-first author), XY Zhou*,, SM Conolly

Non-radioactive and sensitive tracking of neutrophils towards inflammation using antibody functionalized magnetic particle imaging tracers | NANOTHERANOSTICS (2021) [10.7150/NTNO.50721]

KLB Fung, M Samim, A Gribble, V Barzda, and IA Vitkin

Monte Carlo simulation of polarization-sensitive second-harmonic generation and propagation in biological tissue | JOURNAL OF BIOPHOTONICS (2018) [10.1002/JBIO.201800036]

SKILLS

TECHNICAL

PhD:

CAD/CAM (CNC Mill, 3D Printer) • Fourier analysis • statistics • pulse programming • circuit design • electron microscopy

Other:

optical design • PCB layout • FPGA HDL • embedded systems

PROGRAMMING

Proficient:

MATLAB • Python • C/C++ • Shell

Experienced:

L^AT_EX • Verilog HDL • SpinalHDL

Familiar:

SysML • Rust • Assembly

TOOLS/PLATFORMS

Git • Minitab • SolidWorks • VCarve • KiCad • Altium • Arena

EDUCATION

UC BERKELEY-UCSF GRADUATE GROUP IN BIOENGINEERING

PHD IN BIOENGINEERING

Sep 2017 - Dec 2022 | Berkeley, US

Major in Medical Imaging/Devices

Cum. GPA: 4.0/4.0

UNIVERSITY OF TORONTO

B.A.S.C. IN ENGINEERING SCIENCE
WITH HIGH HONORS

Apr 2017 | Toronto, CA

Major in Engineering Physics

Cum. GPA: 3.89 / 4.0

SELECTED HONORS

Siebel Scholar ('21-'22) • UC CRCC Graduate Fellow ('21-'22) • NSERC PGS-D Scholar ('20-'22) • Craven Scholar ('19) • Outstanding GSI ('19)

COURSEWORK

Systems Engineering • Computer Hardware • Medical Imaging • Optics • Optimization Models • Laser Physics • Signal Processing