

Chris M.W. Daft

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Chris Daft offers a wealth of experience in physics, imaging, semiconductors, and signal processing, aimed at advancing human health. His portfolio includes the development of innovative intravascular imagers, devices for monitoring cancer treatments, and cost-effective imaging solutions for point-of-care applications. His expertise spans conceptualizing new systems, advanced wave mathematics, real-time signal processing, and sensor design, with significant contributions in ASIC and MEMS development.

Holding 28 patents and authoring 23 publications, Dr. Daft is a recognized leader in his field, evidenced by his active participation in the IEEE UFFC society. His career encompasses strategic and technical roles at multinationals and startups, demonstrating his capability in product development and market introduction.

Dr. Daft's academic background includes a Ph.D. in Materials Science from Oxford University, focused on mammalian tissue microstructure, and a B.A. and M.A. in Physics. His career trajectory, from Assistant Professor at the University of Illinois researching acoustic microscopy to leading engineering teams in the industry, underscores his commitment to technological innovation in healthcare. This makes him a valuable consultant for engineering managers seeking expertise in electronics, signal processing, and MEMS technology.

RECENT PROJECTS include:

- Transcranial ultrasonic system design and simulation
- IC design for miniaturized intravascular imager
- System and transducer design of wearable devices for cancer treatment monitoring
- Low-cost matrix transducer arrays and electronics for high-volume point-of-care imaging
- Application of Graphics Processing Units (GPUs) to image reconstruction algorithms
- Transducer design and vendor selection for ultrasonic surgical-assistance tool
- Design, testing and sourcing of MEMS transducers for otitis media diagnosis
- Biometric security sensor design
- Acoustic simulations for haptic interface
- SBIR funded by NIH's *National Heart, Lung and Blood Institute* through their program, "Onsite Tools and Technologies for Heart, Lung, and Blood Clinical Research Point-of-Care."

SUMMARY OF CAPABILITIES

Scientist/engineer with a passion for innovating in ultrasound, imaging and electronics, while making the trade-offs which get a product to market. Wide experience in:

- Imagining future systems, and the route to their realization
- Fluency in mathematics of waves and image reconstruction
- Ability to craft real-time signal processors
- Statistical design for six-sigma quality
- Sensor design including finite element analysis
- Application-specific integrated circuit (ASIC) and micro-electro-mechanical systems (MEMS) development
- Deep software experience
- Effective communication skills

PATENTS AND PUBLICATIONS

- 28 patents issued
- 23 articles published in journals and conference proceedings
- Active in IEEE UFFC society, serving on Technical Program Committee for IEEE Ultrasonics Symposium

EMPLOYMENT EXPERIENCE

RIVER SONIC SOLUTIONS, LLC

Consultant, Tucson, AZ: 2012-present

- Technical and business strategy work for large companies including Medtronic, Samsung, Siemens and FUJIFILM
- Product ideation and analysis for start-ups

CEPHASONICS, INC. (previously Samplify)

Chief Scientist, Santa Clara, CA: 2011-2013

- Responsible for technical direction of a start-up seeking to commoditize front-end and beam formation electronics.
- Advised CEO on all technical matters, deeply involved in angel and VC fund-raising.
- Extensive customer interaction: marketed products to imaging and non-traditional customers.

SIEMENS HEALTHCARE, ULTRASOUND DIVISION

Senior Manager, Engineering, Mountain View, CA: 2005-2011

- Delivered 3 ASICs on tight schedule to support new Silicon Ultrasound product line
- Managed team of eight engineers to design, test and manufacture all electronics needed for introduction of Silicon Ultrasound transducers
- Technology evangelist presenting weekly to customers at Siemens' Innovation Center

SENSANT CORPORATION

Manager, Research and Development, San Leandro, CA: 2003-2005

- Managed group which created electronics for first 2D and 3D images using silicon ultrasound transducer
- Co-authored successful grant proposal to DARPA on battlefield ultrasound imaging and surgery. \$7.5 M was awarded to Sensant and its collaborator

Senior Staff Engineer, San Leandro, CA: 2000-2003

- Design of new types of imaging systems using capacitive microfabricated ultrasound transducers (cMUTs, also known as Silicon Ultrasound)
- Co-authored several successful SBIR grant proposals

GENERAL ELECTRIC COMPANY

Physicist, Corporate R&D, Niskayuna, NY: 1990-2000

- Designed algorithms for IC implementation; the resulting beamforming IC was the heart of GE's successful entry into the premium ultrasound market
- 1994 Dushman Award for chip design and system verification
- Developed statistical methods (now patented) for robust simultaneous design of transducer and imaging system to six-sigma quality standards
- GE Six-Sigma Green Belt certification in 1998
- Much transducer design, acoustic field simulation and measurement
- Research in signal processing for improved image quality and blood flow estimation. Several of these signal processing innovations are used in current GE products.

UNIVERSITY OF ILLINOIS

Assistant Professor of Electrical and Computer Engineering, Urbana, IL: 1987-1990

- Research in scanning laser acoustic microscopy to characterize tissue, and applications of neural networks to ultrasonic imaging
- Taught courses in circuit theory, medical imaging and acoustics

EDUCATION

- Ph.D. in Materials Science, Oxford University, UK: 1984-1987. This work involved exploring the elastic microstructure of mammalian tissue.
- B.A. and M.A. in Physics with 1st class honors, Oxford University: 1981-1984. Specialist topics: Electronics and Solid-State Physics.