

Christopher C. Bayan

98 Bowdoin Street

Medford, MA 02155

(650) 704-6870

Christopherc.bayan@gmail.com

Summary

Biomedical / Electrical engineer with extensive experience in image processing including hardware and software design. Trained in the construction of engineered tissue and quantitative monitoring systems for clinical trials.

Education

Tufts University, Medford, MA M.S., Biomedical Engineering 2005-2008

Emphasis: 3-Dimensional in-vitro cellular imaging, concentrating on tissue regeneration.

- Electromechanical Sensors: Prototyped automated sensors for environmental testing.
- Developed a method for quantifying cellular remodeling by applying image processing techniques to engineered collagen constructs.
- Portable Electrocardiograph: Designed and implemented a patient electrical heartbeat monitoring device.

University of California, Santa Barbara, CA. B.S., Electrical Engineering 1999-2003

Emphasis: Digital Signal Processing

Experience

Bioinstrumentation Associate, Procter and Gamble, South Boston, MA April 2009 – Current

- Color segmentation and analysis for high-throughput system.
- Image acquisition of 3-dimensional displacement and strain within biomaterials.
- High speed video motion analysis for prototype research.
- Imaging to quantify dermal surface and vascularization for product development.
- Automated signal analysis for quantitative biometric measurements.

Imaging Research Associate, PAREXEL International, Waltham, MA October 2008 – February 2009

- Performed image analysis and quantification of cancer and osteoporosis for drug clinical trials on CT, MRI datasets.
- Collaborated with clients setting up clinical trial protocols for CT and MRI systems.
- Managed and integrated global data workflow for satellite sites.

Programming Consultant, Optical Society of America, Palo Alto, CA February 2008 - June 2008

- Tested and debugged 3-dimensional volume software for product development.
- Analyzed 3-dimensional data sets, including MRI, CT and confocal images, using volume rendering software.
- Created and evaluated model data set for testing and analysis.

Research Assistant / Teaching Assistant, Tufts University, Medford, MA June 2006 - February 2008

- Combined optical techniques to non-invasively characterize and monitor living tissues using endogenous sources of contrast.
- Developed automated software to segment, differentiate, and quantify engineered tissue.
- Created software suite extending algorithm's use for collaborative research groups.
- Assisted in the construction and acquisition software of a confocal/multiphoton microscope.
- Collaborated with Harvard Children's Hospital to dynamically monitor engineered liver tissue.
- Mentored undergraduate student and aided in senior thesis as well as related research.
- Established laboratory protocols for an introductory laser optics course.

Medical Device Technician, SleepQuest Incorporate, Redwood City, CA July 2004 – August 2005

- Developed error testing and hardware failure procedures for medical devices.
- Troubleshoot device failures and repaired simple errors within medical devices.
- Performed final quality control inspection before releasing the product to a patient.

Medical Device Technician/Data Analyst, Sleep Solutions, Palo Alto, CA July 2003 – June 2004

- Analyzed sleep apnea data from medical devices and created data summaries for doctor's interpretation.
 - Developed revisions and formulated manufacturing procedures with Chief Engineer.
-

Christopher C. Bayan

Technical Skills

Hardware/Software Skills

- Digital signals processing and image analysis (Computer Vision).
- Design, coding, testing, debugging of microprocessor for instrument control
- Signal acquisition and filtering algorithms.
- MATLAB, LABVIEW, C/C++ Computer Programming, Visual Basic, NI Vision.

Bioengineering Lab Experience

- Mammalian cell culture and biomaterial scaffolds.
- Spectrofluorimetry, SEM and Instron.
- Nonlinear, confocal, phase-contrast and DIC microscopy.
- High-speed and time-lapse imaging.
- 3-Dimensional surface-mapping with stress and strain measurements (ARAMIS).

Clinical Trials

- Quantitative measurements of MRI and CT datasets.
- Evaluation of pharmaceutical drug in FDA accordance.

Professional Societies

Engineer in Training (EIT) with Electrical Engineering emphasis certification.

Member of Institute of Electrical and Electronics Engineers (IEEE).

Optical Society of America (OSA) and Society of Optical Engineering (SPIE) student membership.

Volunteer for Life is Good charities including Project Joy, helping underprivileged children.

Publications and Conference Presentations

Christopher Bayan, Jonathan Levitt, David Kaplan and Irene Georgakoudi, "Fully-automated, quantitative, non-invasive assessment of collagen fiber content and organization in thick specimens", Journal of Applied Physics, August 1 2008 – publication.

Christopher Bayan, Jonathan Levitt, Irene Georgakoudi and David Kaplan, "Detection of collagen alignment using Image Processing and Second Harmonic Generation", US Patent, June 1 2008 – patent pending.

Hyeon Joo Kim, Ung Jin Kim, Gary Leisk, **Christopher Bayan**, et al., "Bone Regeneration on Macroporous Aqueous-Derived Silk 3-D Scaffolds", Macromolecular Bioscience, May 4 2007 – publication.

Christopher Bayan, Irene Georgakoudi and David Kaplan, "Quantification of Density and Alignment of Type I Collagen Fibrils within Cellular Gels using Second Harmonic Generation", presented at 2nd Annual Methods in Bioengineering, July 12, 2007 – poster presentation.

Irene. Georgakoudi, William. Rice, **Christopher Bayan**, et al., "Spectral Two-Photon Imaging for Functional Characterization of Engineered Tissues", presented at NIH Workshop, January 18, 2008 - poster presentation.

Christopher Bayan, Irene. Georgakoudi., "Quantification of Density and Alignment of Type I Collagen Fibrils within Cellular Gels using Second Harmonic Generation", presented at Broad Institute Imaging Platform, February 21, 2008 - presentation.

Tom Baer, **Christopher Bayan**, et al., "Collagen Matrices", presented at Stanford Photonics Research Center, April 21, 2008 - presentation.