Resr. OSMAN AKÇAKIR

Personal Information

Email: oakcakir@bezmialem.edu.tr
Web: https://avesis.bezmialem.edu.tr/oakcakir

Biography

PROFESSIONAL EXPERIENCE

Bezmialem Foundation University, Istanbul, Turkey 2017-

A public foundation university medical school with other health sciences.

Scientist

- Built Fourier ptychographic microscope and image acquisition system for stain-free blood and tissue diagnostics.
- Demostrated malaria diagnostic potential using quantitative phase imaging in an animal model.
- Studied liver fibrosis staging using quantitative phase imaging of stain-free tissue slices.

Haemonetics, Corp., Braintree, MA 2012-2016

A global biomedical device company that develops and manufactures apheresis as well as blood hemostasis monitoring devices.

Scientist

- Initiated the development of a prototype laser based device with software control for measuring response of blood to pneumatic perturbation for blood coagulation measurement.

- Explored the development of metrics of platelet quality, demonstrating that an existing product line of test kits could be leveraged, reducing time to market.

- Trained graduate intern on experimental and data analysis methods.

Arryx, Inc., Chicago, IL 2005-2012

A start-up company (later acquired by Haemonetics) that developed an optical accessory for microscopy that allows holographic optical trapping. Application areas included research, health care and forensics. Holographic optical trapping allows multiple microscopic objects to be moved independently in real time.

Scientist

- Selected to lead team to develop and demonstrate optical tweezer application in protein detection leading to patents and eventual acquisition by Haemonetics.

- Designed and built laser cutting accessory for microscope based on pulsed UV laser.

- Built next generation optical tweezer system allowing for high-accuracy bead-surface distance measurement.

- Initiated the development of an optical interferometer with software interface using camera sensor for calibrating spatial light modulator performance.

- Collaborated in the development of fitting software (C++) for preforming 3D video bead tracking based on theory of light scattering (Mie Scattering) allowing high-accuracy video tracking (academic collaboration).

- Developed rapid blood typing technology based on Holographic Microscopy and image analysis of thermal motions of cells on functionalized surfaces (LabVIEW Vision) leading to several patents.

- Supervised software engineer in graphical processing unit (CUDA on GPU) implementation of video 3D tracking software, realizing an 80x improvement in processing speed.

Molecular Biology Consortium, Chicago, IL 2004-2005

A non-profit corporation dedicated to applied research in biological science and synchrotron technology.

Post-Doctoral Scientist

- Developed spectroscopic assay based on BRET (Bioluminescence Resonance Energy Transfer) of molecular motor constructs to test for cooperative binding (academic collaboration).

- Supervised undergraduate doing single-particle image analysis on cryogenic Electron Microscope.

University of Michigan, Biophysical Research Division, Ann Arbor, MI 2002-2004

Post-Doctoral Scientist

- Initiated single molecule protein folding studies using single-molecule microscope to detect spontaneous protein folding-unfolding events.
- Collaboratively built single-molecule microscope using titanium-sapphire laser.

University of Illinois at Urbana-Champaign, Dept. of Physics, Urbana, IL 1996-2001

Research Assistant

- Built custom third-harmonic UV microscope for characterizing silicon nanoparticles using Fluorescence Correlation Spectroscopy. Additionally used two-photon microscopy, Fluorescence Lifetime Spectroscopy (frequency-domain), and Photon Correlation studies for characterization. Initiated low-temperature spectroscopy studies with custom built device.
- Assisted visiting scientists in preparing samples as well as designing and preforming experiments at the Laboratory for Fluorescence Dynamics (an NIH supported national resource center).

University of Illinois at Urbana-Champaign, Dept. of Physics, Urbana, IL 1995-1996

Teaching Assistant

- Demonstrated physics concepts to introductory physics students (for non-science majors) by preforming demonstrations using simple devices.

University of Waterloo, Dept. of Physics, Waterloo, Ont. 1993-1995

Research Assistant

- Successfully developed algorithm and implemented numerical calculation to solve Partial Differential Equations (PDE) for determining the structure of the phase boundary of liquid crystalline polymers (using Fortran).

University of Waterloo, Dept. of Physics, Waterloo, Ont. 1993-1995

Teaching Assistant

- Held tutorial and problem-solving sessions for undergraduate Electricity and Magnetism course for engineers and was teaching assistant for graduate Statistical Mechanics course.

Education Information

Doctorate, University of Illinois at Urbana-Champaign, College of Engineering, Physics, United States Of America 1995 - 2001
Postgraduate, University of Waterloo, Science, Physics, Canada 1993 - 1995
Undergraduate, University of Toronto, Arts and Science, Physics, Canada 1987 - 1993

Foreign Languages

English, C2 Mastery

Research Areas

Biomedical Optics, Biomedical Image Processing, Biophysics

Advising Theses

Akçakır O., Yıldırım İ., Karaciğerde Fibrozisin Kantitatif Faz Görüntüleme Kullanılarak Makina Öğrenme İle Evrelendirilmesi, Postgraduate, K.Lütfi(Student), Continues

Supported Projects

Akçakır O., Gücin Z., Çoban G., Foundation, Karaciğerde Fibrozisin Kantitatif Faz Görüntüleme Kullanılarak Makina Öğrenme İle Evrelendirilmesi, 2021 - 2022