

# Ismet Sahin, PhD

3100 Cleburne St., Houston, Texas 77004  
(713) 313-6708  
ismet.sahin@tsu.edu

## EDUCATION

**University of Pittsburgh** **Pittsburgh, Pennsylvania**  
*PhD* in Electrical and Computer Engineering December 2006  
Thesis: Optimization of Communication Networks with Game Theory

**University of Florida** **Gainesville, Florida**  
*Master of Science* in Electrical and Computer Engineering December 2001

**Cukurova University** **Adana, Turkey**  
*Bachelor of Science* in Electrical and Electronics Engineering August 1996

## RESEARCH INTERESTS

Optimization theory and its applications in biology and medicine, image processing for cancer research

## AWARDS AND GRANTS

**“Preparing Technically Savvy Homeland Security Professionals for Maritime Transportation Security,” AWARD NUMBER: 2014-ST-062-000057-02.**  
(Coinvestigator)

**NIST-ARRA Senior Fellowship Grant (\$162,000)**  
Supported time delay estimation research as a senior research scientist at NIST (National Institute of Standards and Technology) for two years

**Full Scholarship for Master and PhD Education**  
A competitive scholarship granted by the Ministry of National Education of Turkey for pursuing Master and PhD degrees in the US

## EXPERIENCE

**Texas Southern University** **Houston, Texas**  
*Assistant Professor – Tenure Track* September 2016 - Present  
• Teaching engineering courses

**Texas A&M University - Kingsville** **Kingsville, Texas**  
*Visiting Assistant Professor* January 2015 – August 2016

- Teaching electrical engineering courses
  - EEEN 5350 Applications of Neural Networks
  - EEEN 5342 Wireless Communications
  - EEEN 5340 Speech Processing
  - EEEN 5303 Microwave Engineering – graduate level
  - EEEN 4355 Digital Systems Engineering
  - EEEN 4355 Digital Systems Engineering Laboratory with VHDL
  - EEEN 4354 Linear Control Systems
  - EEEN 4354 Linear Control Systems Laboratory
  - EEEN 4336 Microwave Engineering – undergraduate level
  - EEEN 3333 Linear Systems and Signals
- Teaching computer science courses
  - CSEN 5303 Studies on Current Research
- Prepared ABET (Accreditation Board For Engineering And Technology) reports for multiple undergraduate courses
- Has been graduate coordinator for tens of graduate students
- Has been academic advisor for many undergraduate students
- Conducting research on using optimization theory for medical applications
- Judged poster presentations

**Extremalab LLC**

**Houston, Texas**

*Scientific Research Associate and Software Developer*

January 2015

- Improved and applied optimization algorithms to biological applications
- Mobile applications for learning tools

**NIST (National Institute of Standards and Technology) Gaithersburg, Maryland**

*Senior Research Scientist*

June 2013

- Obtained a two-year research grant and worked in NIST Mathematical Analysis and Modeling Group at Information Technology Laboratory
- Established a very successful time delay estimation method yielding estimations with sub-sample precision
- Achieved identification of cancer patients from the mass spectrometry serum proteome with a novel DFT method

*Postdoctoral Associate*

March 2011

- Worked in Neutron Reflectivity group in NIST NCNR (NIST Center for Neutron Research)
- Developed the stochastic optimization method Random Lines (RL) which substantially reduced nuclear reflectivity data analysis
- Programmed the publicly available NIST Software toolbox Refl1D in Python with four colleagues; Refl1D has been referenced thousands of times by scientific papers

**University of Pittsburgh**

**Pittsburgh, PA**

*Postdoctoral Fellow* in Biomedical Informatics Department

January 2009

- Developed a successful frequency domain method for estimating fetal heart

- rate from abdominal fetal ECG
- Developed a Bayesian estimation model for aerosol dispersion of materials

**Compunetix Inc.** **Monroeville, PA**  
*Embedded Telecommunication Software Engineer* Jul. 2006 – Nov. 2007

- Increased the capacity of advanced teleconferencing systems approximately five times
- Designed, implemented, debugged, and tested the embedded software system (C++)

**University of Pittsburgh** **Pittsburgh, PA**  
*Teaching Assistant in Electrical and Computer Engineering* Aug. 2004 – Aug. 2005

- Signal Processing Laboratory
- Computer Networks

**Bosch Research and Technology Center** **Pittsburgh, PA**  
*Research Engineer Intern* Jul. 2003 – Jul. 2004

- Successfully developed a very sensitive laser-based (LiDAR) security system for highly secured places such as museums
- Developed advanced signal processing algorithms which efficiently estimated distance for ranging radar devices

**University of Florida** **Pittsburgh, PA**  
*Teaching Assistant in Electrical and Computer Engineering* Aug. 2000 – Dec. 2001

- C++ for graduate level
- C++ for undergraduate level

**Cukurova University** **Pittsburgh, PA**  
*Instructor in Electrical and Electronics Engineering* Dec. 1997

*Teaching/Research Assistant Electrical and Electronics Eng.* Jan. 1996 - Sep. 1997

- Electronic Circuits
- Digital Logic Design Laboratory

## COLLABORATIONS

### MD Anderson Cancer Center

- Novel algorithms for quantitative image analysis on data obtained from screening of cancer immunotherapy drugs (Collaboration with Dr Peter Davies and Dr Florencia McAllister)
- Novel Algorithm for tumor spheres automatic quantification and its application for drug screening (Collaboration with Dr Peter Davies and Dr Florencia McAllister)

### Johns Hopkins University

- Automated Multiparametric Image analysis performed on cancer core biopsies (Collaborating with Dr. Ana de Jesus)

## PROFESSIONAL ACTIVITIES

### Reviewer

- IEEE Transactions on Evolutionary Computation
- IEEE Transactions on Antennas and Propagation
- International Conference of the IEEE Engineering in Medicine and Biology
- IEEE Conference on Decision and Control
- PLOS ONE

### Conference Session Chair for Global Optimization

- INFORMS 2017 (The Institute for Operations Research and the Management Sciences), Oct 22-25, 2017, Houston, TX

### Member

- IEEE Engineering in Medicine and Biology Society

## LANGUAGES

Fluently speaking English, Turkish, and Spanish

## PROGRAMMING LANGUAGES

**Frequently Used:** Python and Numpy, Matlab, Julia, C++, Swift

**Others:** Lisp, Rust, Fortran, Java, Chapel, Elm, Flask with Python, Objective C

## BOOK CHAPTERS

- Erick Riquelme, Pompeyo Quesada, **Ismet Sahin**, Yu Zhang, and Florencia McAllister, "Immunoprofiling of murine tumors using multispectral microscopy," Chapter **accepted** for the book: Methods in Molecular Biology by Springer Nature to be published in 2018

## SELECTED ORAL / POSTER PRESENTATIONS

- Nuri Yilmazer and Ismet Sahin, "Accurate Beamforming By Using Population-Based Optimization Methods," INFORMS 2017, Houston, TX. October 2017
- Abayomi Ajofoyinbo and Ismet Sahin, "Electrical Power Grid Optimization Using Semi-Markov Decision Process," INFORMS 2017, Houston, TX. October 2017
- **Ismet Sahin** and Nuri Yilmazer, "Frequency Domain Time Delay Estimation with Optimization over Randomly Selected Lines," College Station, TX, GOC

2017 (Global Optimization Conference). March 2017

- Yu Zhang, **Ismet Sahin**, Jennifer Bailey, Steven Leach, and Florencia McAllister, "IL-17 mediated regulation of pancreatic intraepithelial neoplasia," Abstract accepted and poster presented at AACR/PanCAN National Meeting. April 2016. Orlando, FL.
- Yu Zhang, **Ismet Sahin**, S. Gupta, Arniban Maitra, Steve Leach, Jenifer Bailey and Florencia McAllister, "IL-17 induces pancreatic cancer stemness," AACR Special Meeting on Pancreatic Cancer, Orlando, Florida, May 2016
- Yu Zhang, **Ismet Sahin**, Sonal Gupta, Anirban Maitra, Jennifer Bailey, Steven Leach and Florencia McAllister, "Influence of TH17 cells in cancer," PanCAN Meeting- Los Angeles, CA. August 2015
- Yu Zhang, **Ismet Sahin**, Jennifer Bailey, Steven Leach, and Florencia McAllister, "Immunological regulation of pancreatic stemness," Abstract accepted and poster presented at PanCan National Meeting. August 2015. San Diego, CA.
- **Ismet Sahin**, "Deterministic and Stochastic Optimization Algorithms," California Institute of Technology and other 4 universities in the DANSE project, 2011
- **Ismet Sahin**, "Reducing Computational Complexity of Time Delay Estimation Method Using Frequency Domain Alignment," IEEE Proceedings of the 43rd Annual Conference on Information Sciences and Systems, pp. 43-46, 2009
- **Ismet Sahin**, "Fetal Heart Rate Estimation By Fitting Half-Wave Rectified Cosine Functions to Power Spectra of Fetal ECG Waveforms," IEEE Proceedings of the 43rd Annual Conference on Information Sciences and Systems, pp. 778-781, 2009

## PUBLICATIONS

- Yu Zhang, Vidhi Chandra, Erick Riquelme Sanchez, Prasanta Dutta, Pompeyo Quesada, Amanda Rakoski, Michelle Zoltan, Nivedita Arora, Seyda Baydogan, William Horne, Jared Burks, Hanwen Xu, S. Perwez Hussain, Huamin Wang, Sonal Gupta, Anirban Maitra, Jennifer Bailey, Seyed Javad Moghaddam, Sulagna Banerjee, **Ismet Sahin**, Pratip Bhattacharya, and Florencia McAllister, "Interleukin 17 induced- neutrophil extracellular traps mediate resistance to checkpoint blockade in pancreatic cancer" (**Accepted** on July 6, 2020 by) Journal of Experimental Medicine
- **Sahin, Ismet** and Yilmazer, Nuri and Celebi, Tugcan and Ozcelik, Selahattin and Ajofoyinbo, Abayomi, "Stepping away from maximizers of concave quadratics in random line search," *Evolutionary Intelligence*, Mar. 16, 2020 (DOI: <https://doi.org/10.1007/s12065-020-00380-1>)

- De Jesus-Acosta, Ana and Sugar, Elizabeth A. and O'Dwyer, Peter J. and Ramanathan, Ramesh K. and Von Hoff, Daniel D. and Rasheed, Zeshaan and Zheng, Lei and Begum, Asma and Anders, Robert and Maitra, Anirban and McAllister, Florencia and Rajeshkumar, N. V. and Yabuuchi, Shinichi and de Wilde, Roeland F. and Batukbhai, Bhavina and **Sahin, Ismet** and Laheru, Daniel A., "Phase 2 study of vismodegib, a hedgehog inhibitor, combined with gemcitabine and nab-paclitaxel in patients with untreated metastatic pancreatic adenocarcinoma," *British Journal of Cancer*, vol. 122, no. 4, pp. 498—505, Feb. 18, 2020
- Erick Riquelme, Yu Zhang, Liangliang Zhang, Maria Montiel, Michelle Zoltan, Wenli Dong, Pompeyo Quesada, **Ismet Sahin**, Vidhi Chandra, Anthony San Lucas, Paul Scheet, Hanwen Xu, Samir M. Hanash, Lei Feng, Jared K. Burks, Kim-Anh Do, Christine B. Peterson, Deborah Nejman, Ching-Wei D. Tzeng, Michael P. Kim, Cynthia L. Sears, Nadim Ajami, Joseph Petrosino, Laura D. Wood, Anirban Maitra, Ravid Straussman, Matthew Katz, James Robert White, Robert Jenq, Jennifer Wargo, and Florencia McAllister, "Tumor Microbiome Diversity and Composition Influence Pancreatic Cancer Outcomes," *Cell*, vol. 178, pp. 795–806, Aug. 8, 2019
- **Ismet Sahin**, Yu Zhang, Florencia McAllister, "Tumor Spheres Quantification with Smoothed Euclidean Distance Transform," *Journal of Molecular Imaging and Dynamics*, vol.8, no.1, pp. 143, 2018. doi:10.4172/2155-9937.1000
- Zhang Y., Zoltan M., Riquelme E., Xu H., **Sahin I.**, Castro-Pando S., Montiel MF., Chang K., Jiang Z., Ling J., Gupta S., Horne W., Pruski M., Wang H., Sun SC., Lozano G., Chiao P., Maitra A., Leach SD., Kolls JK., Vilar E., Wang TC., Bailey JM., McAllister F., "Immune Cell Production of Interleukin 17 Induces Stem Cell Features of Pancreatic Intraepithelial Neoplasia Cells," *Gastroenterology*, vol. 155, no: 1, pp. 210-223, Mar 29 2018. DOI: 10.1053/j.gastro.2018.03.041
- Yu Zhang, **Ismet Sahin**, Sonal Gupta, Anirban Maitra, Jennifer Bailey, Steven Leach, Florencia McAllister, "Influence of IL-17-secreting immune cells in pancreatic cancer stemness," *Proceedings of the 107th Annual Meeting of the American Association for Cancer Research*, April 2016, New Orleans, LA.
- **Ismet Sahin**, Marwan A. Simaan, and Anthony J. Kearsley, "Successive Frequency Domain Minimization for Time Delay Estimation," *Signal Processing*, vol. 98, pp. 96-101, May 2014
- **Ismet Sahin**, "Minimization over Randomly Selected Lines," *An International Journal of Optimization and Control: Theories & Applications*, vol. 3, no. 2, pp. 111-119, 2013
- **Ismet Sahin**, "Random Lines: A Novel Population Set-based Evolutionary Global Optimization Algorithm," *Lecture Notes in Computer Science*, Springer, vol. 6621/2011, pp. 97-107, 2011

- **Ismet Sahin**, Nuri Yilmazer, and Marwan A. Simaan, "A Method for Sub-sample Fetal Heart Rate Estimation Under Noisy Conditions," IEEE Transactions on Biomedical Engineering, vol. 57, no. 4, pp. 875-883, 2010
- **Ismet Sahin**, "Registration of 2D Point Sets by Minimization of Complex Cost Functions for Medical Images," Proceedings of the 2010 Annual International Conference of the IEEE Engineering in Medicine and Biology Society, pp. 5605-5607, 2010
- **Ismet Sahin** and Nuri Yilmazer, "A Discrete Fourier Transform Method for Alignment of Visual Evoked Potentials," IEEE Proceedings of the Computational Intelligence in Bioinformatics and Computational Biology, pp. 1-3, 2010
- Nuri Yilmazer, **Ismet Sahin**, S. Burintramart, and T.K. Sarkar, "Simultaneous Estimation of Direction of Arrival and Frequency of the Signals Using Realistic Antenna Elements," IEEE Proceedings of the Antennas and Propagation Society, pp. 1-4, 2009
- **Ismet Sahin** and Nuri Yilmazer, "Reducing Computational Complexity of Time Delay Estimation Method Using Frequency Domain Alignment," IEEE Proceedings of the 43rd Annual Conference on Information Sciences and Systems, pp. 43-46, 2009
- **Ismet Sahin** and Nuri Yilmazer, "Fetal Heart Rate Estimation By Fitting Half-Wave Rectified Cosine Functions to Power Spectra of Fetal ECG Waveforms," IEEE Proceedings of the 43rd Annual Conference on Information Sciences and Systems, pp. 778-781, 2009
- **Ismet Sahin**, and Marwan A. Simaan, "Competitive Flow Control in General Multi-node Multi-link Communication Networks," International Journal of Communication Systems, vol. 21, no. 2, pp. 167-184, 2008
- **Ismet Sahin** and N. Yilmazer, "A Least Squares DFT Method for Sub-sample Fetal Heart Rate Estimation under Noisy Conditions," Proceedings of the 30th Annual International Conference of the IEEE Engineering in Medicine and Biology, pp. 4399-4402, 2008
- **Ismet Sahin** and Marwan A. Simaan, "Flow Control in Communication Networks with Competing Teams of Cooperative Users," IEEE Proceedings of the 2007 Global Telecommunications Conference, pp.497-501, 2007
- **Ismet Sahin** and Marwan A. Simaan, "A Flow and Routing Control Policy for Communication Networks with Multiple Competitive Users," Journal of The Franklin Institute, vol. 343, no. 2, pp. 168-180, 2006
- Jae B. Pahk, **Ismet Sahin**, and George.E. Klinzing, "Pressure Fluctuations in Assessing Flow Regimes in Pneumatic Conveying of Polymer Pellets," Proceedings of the 5th International Conference for Conveying and Handling of Particulate Solids, 2006

- **Ismet Sahin**, and Marwan A. Simaan, “A Game Theoretic Flow and Routing Control Policy for Two-Node Parallel-Link Communication Networks with Multiple Users,” Proceedings of the 15th IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications, vol.4, pp. 2478-2482, 2004
- **Ismet Sahin**, A. Hamit Serbest, and M. A. Lyalinov, “Diffraction of Plane Waves by an Impedance Half-plane in Cold Plasma,” IEEE Proceedings of International Conference on Microwave and Millimeter Wave Technology, pp.569-572, 1998

#### **SELECTED INVITED TALKS**

- “Game Theory and its Applications in Communication Networks,” Industrial Engineering Department, University of Houston, 03/25/2016
- “Random Lines Global Optimization Algorithm,” Computer Security Division at National Institute of Standards and Technology (Crypto Reading Club), Jan 2012
- “Stochastic Optimization for Bioinformatics applications,” Biological Data Sciences at University of Maryland – Baltimore, Feb. 2012