Naomi Joseph, BS

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Research Interests

Biomedical imaging, machine learning, deep learning, image processing

Education

University of Pittsburgh

- B.S., Chemical Engineering (*summa cum laude*) August 2014 - April 2018

Work Experience

Engineering Summer Research at the National University of Singapore May-June 2017
Student Researcher Singapore

- Performed k-means clustering in MATLAB and Python on glioblastomas of magnetic resonance imaging scans to aid physicians to accurately predict a patient's life expectancy
- Manually segmented glioblastomas to delineate the different pathological regions for surgical planning

EQT May – August 2016
Productions Field Engineering Intern Waynesburg, PA

- Initiated and developed a master database using previously obtained data for the Cathodic Protection Project to propose a future plan for data collection
- Applied chemical engineering concepts to manipulate pipeline pressure differentials and unload water from gas wells
- Expanded on Excel coding skills to analyze company budgets and company productions per gas well

Michigan Orthopedic Center and McClaren Hospital June-Aug. 2015
Job Shadowing and Research Opportunity Lansing, MI

- Gained a better understanding of patient and physician interaction via observation of patient appointments and surgeries for joint replacements with orthopedic surgeon Dr. J. Wesley Mesko
- Compiled patient data to compare the benefits of the robotic Navio Surgical System versus a manual surgical approach

Pending Journal Submissions

- "Deep learning for segmenting cells in corneal endothelium images," C. Kolluru, B. A. Benetz, **N. Joseph,** H. J. Menegay, J. H. Lass and D.L. Wilson, Journal of Medical Imaging.
- "Comparison of deep learning and manual endothelial cell analysis in donor corneas post Descemet Stripping Automated Endothelial Keratoplasty (DSAEK)," **N. Joseph**, C. Kolluru, H. Menegay, S. Burke, J.H. Lass, B.A. Benetz, D.L. Wilson, Cornea.
- "Synthesis and characterization of CaSr-Metal Organic Frameworks for biodegradable orthopedic applications," **N. Joseph**, H. D. Lawson, K. J. Overholt, K. Damodaran, R. Gottardi, A. P. Acharya, S. R. Little, Journal of Bone and Mineral Research.
- "Multimodal magnetic resonance imaging predicts regional amyloid burden in the brain," A. Rangarajan, M. Wu, **N. Joseph**, H. T. Karim, C. Laymon, D. Tudorascu, B. Snitz, A. Cohen, C. Mathis, W. Klunk, H. J. Aizenstein, NeuroImage Journal.

Conference Proceedings and Abstracts

- "Machine learning for segmenting cells in corneal endothelium images," C. Kolluru, B. A. Benetz**, N. Joseph**, H. J. Menegay, J. H. Lass and D.L. Wilson; SPIE Medical Imaging Conference, 2019, San Diego.
- "Comparison of deep learning and manual endothelial cell analysis in donor corneas post Descemet Stripping Automated Endothelial Keratoplasty (DSAEK)," **N. Joseph**, C. Kolluru, H. Menegay, S. Burke, J.H. Lass, B.A. Benetz, D.L. Wilson; ARVO 2019 Annual Meeting, 2019, Vancouver, Canada.
- "Comparison of manual and fully automatic cell hexagonality measure in corneal endothelium images in transplanted corneas post Descemet Stripping Automated Endothelial Keratoplasty (DSAEK)," **N. Joseph**, C. Kolluru, H. Menegay, S. Burke, J.H. Lass, B.A. Benetz, D.L. Wilson; ARVO Imaging in the Eye Conference, 2019, Vancouver, Canada.

Technical Skills

- *Programming Languages:* MATLAB, Python

Leadership

- Graduate Student Council Representative
- Biomedical Graduate Student Organization, *Vice President*
- University of Pittsburgh Engineering Student Council, *Vice President*
- Swanson School of Engineering EXCEL High School Tutor

Honors and Awards

- Dean's Award, University of Pittsburgh Honors College (2018)
- Honor's List Award, University of Pittsburgh (2016-2018)
- Dean's List Award, University of Pittsburgh (2015-2018)

Professional Society Memberships

- Association of Research in Vision and Ophthalmology
- Omega Chi Epsilon
- Tau Beta Pi
- American Institute of Chemical Engineers