Tasadduk Chowdhury

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OBJECTIVE

Seeking a Summer Research Intern position at Quantlab Financial.

SUMMARY

- PhD candidate in Applied Mathematics. Experienced in computed tomography, image and signal processing, numerical methods, and machine learning.
- 7 years of programming experience in C/ C++ and MATLAB. Working knowledge of Unix/Linux operating systems. Strong background in object oriented programming and data structures.
- Collaborated with a team of multidisciplinary researchers and solved a medical problem.
- Demonstrated exceptional leadership skills by training students to write codes in MATLAB.
- Ability to give technical presentations at seminars and workshops.

EDUCATION

University of Houston, Houston, TX

Doctorate in Applied Mathematics, GPA: 3.76/4.0 *Expected in May 2016*
Dissertation: Region-of-interest reconstruction algorithms in X-ray CT imaging.

Master of Science in Applied Mathematics, GPA: 3.72/4.0 *August 2012*

Bachelor of Science in Mathematics, Major GPA: 3.4/4.0 *August 2009*
Minor: **Computer Science**

RELEVANT COURSES

Probability Theory, Statistical Analysis, Machine Learning, Stochastic Processes, Data Scientist's Toolbox, R Programming, Numerical Analysis, Mathematics in Medical Imaging, Medical Imaging Physics, Differential Equations, Partial Differential Equations, Wavelets and Compressed Sensing, Data Structures, Scientific Computing,

COMPUTER SKILLS

Programming: C/C++, MATLAB, Python, R, Shell Scripting, SQL
Operating System: Unix/Linux, Mac OS, Windows
Publishing: HTML, CSS, LaTeX
Software: Excel, Visual Studio, GCC, Mathematica, Inkscape
Other: Parallel Computing, Github

PROJECT EXPERIENCE

Algorithms in Computed Tomography *Fall 2012 - Spring 2015*
University of Houston, Houston, TX

- Derived a novel reconstruction method in X-ray CT to reduce the overall radiation exposure by localizing the X-rays and using wavelets based regularization.
- Developed integrated codes in C/C++ and MATLAB using parallel computing techniques for both simulation of X-ray data acquisition and 3D image reconstruction.
- Reduced 75% of computation time by executing codes on a high performance computing cluster.

Automated Surgical Planning in Dentistry *Summer 2012 - Spring 2013*
Houston Methodist & University of Houston, Houston, TX

- Collaborated with a diverse team of mathematicians and medical scientists.
- Developed an algorithm to assist doctors in surgical planning using principal component analysis (PCA) and mathematical optimization.
- Implemented C++ and MATLAB, and validated on real data sets from patients.

3D Object Recognition *Spring 2014*
University of Houston, Houston, TX

- Implemented codes to solve the 3D object recognition problem using various machine learning methods including kernel PCA, SVM, KNN.
- Verified algorithm using open image databases including COIL-100 and CALTECH.
- Presented methods and results at the Machine Learning Workshop on campus.

Digital Image Processing (Master's Research) *Fall 2011 - Spring 2012*
University of Houston, Houston, TX
- Studied image processing methods based on mathematical morphology.
- Implemented algorithms for noise removal, edge detection, and pattern matching.
- Developed codes in C and MATLAB, and tested on a large set of 2D and 3D images.

LEADERSHIP EXPERIENCE

Graduate Teaching Assistant & Tutor *Fall 2011 - Present*
University of Houston, Houston, TX
- Conduct calculus recitations in a classroom of 60 students.
- Grade homework and exams for math courses including calculus, probability and statistics, differential equations, and complex analysis.
- Provide one-on-one tutoring to students at the math tutoring center on campus.

Instructor of Linear Algebra *Fall 2014, Fall 2015*
University of Houston, Houston, TX
- Teach junior level linear algebra for a class of 70 students.
- Design course syllabus and prepare homework, quizzes, and exams.
- Train students to use MATLAB to solve numerical problems.

AWARDS & FELLOWSHIPS

Student Travel Grant - 13th Fully 3D Meeting, *June 2015*
Best Graduate Student Research Presentation Award, *May 2015*
Doctoral Student Tuition Fellowship, *August 2013*
Graduate Assistant Teaching Fellowship, *August 2011*

PUBLICATIONS

"An iterative algorithm for region-of-interest reconstruction with cone-beam acquisitions on a generic source trajectory", **T. Chowdhury**, A. Sen, R. Azencott. Proc of 13th Fully 3D Meeting, 2015.

"Region-of-interest reconstructions from truncated 3D x-ray projections", R. Azencott, B. G. Bodmann, **T. Chowdhury**, D. Labate, A. Sen, and D. Vera. (to be submitted).

ACTIVITIES

President, UH SIAM Student Chapter *Fall 2015 - Present*
Vice President, UH SIAM Student Chapter *Fall 2014 - Spring 2015*
Webmaster, UH SIAM Student Chapter *Fall 2014 - Present*
Imaging Research Meeting, University of Houston *Fall 2012*
Society for Industrial and Applied Mathematics (SIAM) *Fall 2011 - Present*
American Mathematical Society (AMS) *Fall 2011 - Present*