

KONSTANTIN DMITRIEV

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OBJECTIVE

Interested in Summer 2018 internships in research and software development

RESEARCH INTERESTS

Computer Vision, Image Processing, Machine Learning, Computer Graphics and Visualization

PROGRAMMING & TECHNICAL SKILLS

Programming languages
APIs

Python, C++, MATLAB, Objective-C, SQL, \LaTeX
Scikit, Numpy, Scipy, ITK, TensorFlow, Keras, OpenCV, VTK,
OpenGL, Foundation Framework, LibXML

EDUCATION

Ph.D. Candidate (GPA: 3.8) 2014 - Present
Computer Science,
Stony Brook University, Stony Brook, NY

Bachelors of Science (GPA: 4.9/5.0) 2010 - 2014
Computer Science and Applied Mathematics, (Graduated with Honors)
Saint Petersburg State Electrotechnical University, Saint Petersburg, Russia

RESEARCH EXPERIENCE

Harvard University September 2017 - Present

Visiting Research Assistant, Visual Computing Group

Automatic Correction of Neuron Segmentation in Electron Microscopy Images

Python; Toolkits and libraries: TensorFlow, Keras, OpenCV

- Developing a “proofreading” algorithm to correct merge errors of the neuron segmentations.

Stony Brook University October 2014 - Present

Research Assistant, Center for Visual Computing

Automatic Pancreatic Cyst Classification in CT scans using CNNs and Random Forest

Python; Toolkits and libraries: Scikit-image, Scikit-learn, TensorFlow, Keras

- Collaborated with radiologists to determine most descriptive demographic and radiological characteristics for different pancreatic cysts.
- Designed and developed a novel system for classification of the segmented pancreatic cysts using a CNN and random forest ensemble that outperforms radiologists by 15.1%.

Visual Analytics of Image-derived Features for Spleen

C++, Python; Toolkits and libraries: ITK, Scikit-image, Scikit-learn

- Collaborated with radiologists and identified the most reliable radiological features for quantitative comparison in treatment evaluation.
- Developed the algorithms for various feature generation: measurements, shape and texture description.

Semi-automatic Segmentation of Pancreas and Cysts from CT images

C++, Python; Toolkits and libraries: ITK, VTK, Scikit-image, Qt

- Developed a segmentation tool for the segmentation, utilizing random walker and other image processing algorithms.
- Developed UI to obtain user inputs.
- Designed a novel method for pancreatic cysts segmentation.
- Achieved greater performance compared to the state-of-the-art approaches in pancreas segmentation.

Saint Petersburg State Electrotechnical University, Russia November 2013 - May 2014

3D Reconstruction of Indoor Environments From Video

C++; Toolkits and libraries: OpenGL, OpenCV

- Developed a system for a real-time 3D reconstruction from video utilizing optical flow algorithms.
- Designed UI for the visualization and interaction with the reconstructed scene.

WORK EXPERIENCE

iOS Software Engineer Intern

January 2013 - March 2013

Digital Design, Saint Petersburg, Russia

iOS Application for Russian movie theater chain

Objective-C; Toolkits and libraries: Foundation Framework, CoreData, LibXML

- Worked in a team of four to design applications structure, database and UI.
- Developed a segment for managing and storing users favorite movies.

Teaching Assistant

September 2014 - December 2014


Department of Computer Science, Stony Brook University, NY

Courses: Intro to the Theory of Computation; Principles of Programming Languages


- Designed and presented select lectures for groups of 40 students, graded student submissions.

COURSE PROJECTS

CSE 527 Computer Vision: **Automatic Spleen Segmentation in Abdominal CT Scans.** Implemented a method for automatic spleen segmentation based on a hierarchical two-tiered classification of image patches. (C++, MATLAB, VTK, VLFeat)

CSE 534 Computer Networks: **Analysis of Russian Collateral Censorship.** Implemented data gathering and processing procedures after connecting to multiple VPN servers. (Python) 

CSE 528 Computer Graphics: **Developable Cloth Simulation.** Implemented a method for real-time cloth simulation. (C++, OpenGL)

CSE 537 Artificial Intelligence: **Naïve Bayes Spam Filtering.** Implemented a spam filter with Naïve Bayes. (Python) 

PUBLICATIONS

1. **Dmitriev, K.**, Kaufman, A., Javed, A., Hruban, R., Fishman, E., Lennon, A.M., Saltz, J., (2017). "Classification of Pancreatic Cysts in Computed Tomography Images Using a Random Forest and Convolutional Neural Network Ensemble. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, (pp. 150-158). Springer, Cham.

2. Gutenko, I., **Dmitriev, K.**, Kaufman, A., Barish, M., (2017). AnaFe: Visual Analytics of Image-Derived Temporal Features - Focusing on Spleen. *IEEE Transactions on Visualization and Computer Graphics*, 23(1), 171-180.

3. **Dmitriev, K.**, Gutenko, I., Nadeem, S, Kaufman A., (2016). "Pancreas and cyst segmentation." *SPIE Medical Imaging: Image Processing*, (p. 97842C).

AWARDS

The Renaissance Technologies Fellowship, Stony Brook University

2014 - 2017

Student Travel Award, Medical Image Computing and Computer-Assisted Intervention Society

September, 2017

LANGUAGES

English

Russian