

# Alexandros-Stavros Iliopoulos

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## Research Interests

Development of robust computational models and scalable parallel algorithms for discovery and exploitation of structure in high-dimensional data, including image, text, and graph data analysis.

## Education

2020 **Ph.D. in Computer Science**  
Duke University, NC, USA

2011 **Diploma in Electrical and Computer Engineering**  
Aristotle University of Thessaloniki, Greece

Spring 2009 **Artificial Intelligence Master, Electrical Engineering Master**  
Katholieke Universiteit Leuven, Belgium  
Attendance through the Erasmus exchange program of the E.U.

## Publications

A. Dubey, A.-S. Iliopoulos, and X. Sun. “Incisive DVF inversion via bi-residual feedback”. *16th Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, USA, 2020. Accepted.

A.-S. Iliopoulos, A. Dubey, and X. Sun. “idvf: Iterative inversion of deformation vector field with adaptive bi-residual feedback control”. *Journal of Open Source Software*, 4(35):1076, 2019.

N. Pitsianis, D. Floros, A.-S. Iliopoulos, and X. Sun. “SG-t-SNE-II: Swift neighbor embedding of sparse stochastic graphs”. *Journal of Open Source Software*, 4(39):1577, 2019.

N. Pitsianis, A.-S. Iliopoulos, D. Floros, and X. Sun. “Spaceland embedding of sparse stochastic graphs”. *IEEE High Performance Extreme Computing Conference*, Waltham, MA, USA, 2019.

A. Dubey\*, A.-S. Iliopoulos\*, X. Sun, F.-F. Yin, and L. Ren. “Iterative inversion of deformation vector fields with feedback control”. *Medical Physics*, 45(7):3147–3160, 2018. \*Co-first authors.

N. Pitsianis, D. Floros, A.-S. Iliopoulos, K. Mylonakis, N. Sismanis, and X. Sun. “Rapid near-neighbor interaction of high-dimensional data via hierarchical clustering”, 2017. [arXiv:1709.03671](https://arxiv.org/abs/1709.03671) [cs.LG].

A.-S. Iliopoulos, T. Liu, and X. Sun. “Hyperspectral image classification and clutter detection via multiple embeddings and nonlinear dimension reductions”, 2015. [arXiv:1506.01115](https://arxiv.org/abs/1506.01115) [cs.CV].

A.-S. Iliopoulos, J. Hu, N. Pitsianis, X. Sun, M. Gehm, and D. Brady. “Big snapshot stitching with scarce overlap”. *IEEE High Performance Extreme Computing Conference*, Waltham, MA, USA, 2013.

A.-S. Iliopoulos. *AutoGPU: Automatic generation of optimized CUDA kernel code*. Diploma thesis, Aristotle University of Thessaloniki, Thessaloniki, Greece, 2011.

## Oral Presentations

A. Dubey, A.-S. Iliopoulos, X. Sun, F.-F. Yin, and L. Ren. “Iterative inversion of deformation vector fields with feedback control”. *Medical Physics*, 44(6), 2017.

D. Floros, A.-S. Iliopoulos, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Adaptive denoising over multiple anatomical regions with edge and texture preservation”. *Medical Physics*, 44(6), 2017.

D. Floros, A.-S. Iliopoulos, N. Pitsianis, and X. Sun. “Windowed all-kNN search over multidimensional array data from medical imaging”. *GPU Technology Conference*, San Jose, CA, USA, 2016.

A.-S. Iliopoulos, D. Floros, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Local statistical filtering via domain dissection for medical imaging”. *GPU Technology Conference*, San Jose, CA, USA, 2016.

A.-S. Iliopoulos, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Fast digital tomosynthesis for LIVE radiation therapy”. *GPU Technology Conference*, San Jose, CA, USA, 2015.

A.-S. Iliopoulos, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Rapid projection computations for on-board digital tomosynthesis in radiation therapy”. *Medical Physics*, 42(6):3658, 2015.

A.-S. Iliopoulos, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Recomposable ray projectors for digital tomosynthesis”. *6th Panhellenic Conference on Biomedical Technology*, Athens, Greece, 2015.

A.-S. Iliopoulos, Y. Zhang, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Multi-layer spectral analysis for tensor structure encoding of 4D deformation field data”. *Medical Physics*, 42(6):3669, 2015.

X. Xu, A.-S. Iliopoulos, Y. Zhang, N. Pitsianis, X. Sun, F.-F. Yin, and L. Ren. “Towards real-time on-board volumetric image reconstruction for intrafraction target verification in radiation therapy”. *Medical Physics*, 41(6):118, 2014.

A.-S. Iliopoulos, J. Hu, N. Pitsianis, X. Sun, M. Gehm, and D. Brady. “De-ghosting for gigapixel snapshot processing”. *GPU Technology Conference*, San Jose, CA, USA, 2013.

## Invited Talks

“Sparse and structured embeddings in matrix algebra: analysis & applications”. East Coast Computer Algebra Day, Durham, NC, USA, 2014.

“Big snapshot stitching with scarce overlap”. Visualization Friday Forum, Duke University, Durham, NC, USA, 2013.

## Honors & Awards

- 2013 **Outstanding Ph.D. Research Initiation Project Award 2012–2013**, for “Large-scale image stitching and de-ghosting,” Department of Computer Science, Duke University
- 2013 **Outstanding Teaching Award 2012–2013**, for *Introduction to Numerical Methods and Analysis*, Department of Computer Science, Duke University
- 2011 **Fulbright Scholarship**, The Fulbright Foundation in Greece
- 2009 **Erasmus Scholarship**, Lifelong Learning Programme, E.U.

## Programming Skills

Matlab, C/C++, CUDA, Cilk, Haskell, Standard ML, Java, Mathematica, MPI

## Teaching Experience

- Spring 2017 **Co-instructor**, Advanced Topics in Computer Science: Parallel Programming, Duke University
- Spring 2014 **Teaching Assistant**, Numerical Analysis, Duke University
- Fall 2013 **Teaching Assistant**, Fundamentals of Web-Based Multimedia Communications, Duke University
- Fall 2012 **Teaching Assistant**, Computer Vision, Duke University
- Fall 2011 **Teaching Assistant**, Introduction to Numerical Methods and Analysis, Duke University

## Academic Service

- 2015 **Operating Committee**, Chair, Workshop on Mathematical Foundations for Fast Multi-Resolution Interactions and Large Data Analysis, Durham, NC, USA
- 2014–2015 **Graduate Program Committee**, Student representative, Department of Computer Science, Duke University
- 2014 **Organizing Committee**, East Coast Computer Algebra Day, Durham, NC, USA
- 2013–2014 **Graduate Recruitment Committee**, Chair, Department of Computer Science, Duke University
- 2012–2013 **Graduate Recruitment Committee**, Department of Computer Science, Duke University
- 2012–2013 **Graduate Program Committee**, Student representative, Department of Computer Science, Duke University