Nicholas Heller

Curriculum Vitae

Shepherd Laboratories 246
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Research Interests

Machine Learning, Medical Image Analysis, Mathematical Oncology, Reproducibility and Challenge Design. Applications to Renal Cancer

Education

2017–Present **PhD Computer Science & Engineering**, *University of Minnesota – Twin Cities*.
Advisor: Nikolaos Papanikolopoulos
GPA: 3.94

2013–2017 **B.S. Computer Science**, *University of Minnesota – Twin Cities*.

Selected Publications and Presentations

2019 *The state of the art in kidney and kidney tumor segmentation in contrast-enhanced CT imaging: Results of the KiTS19 Challenge*.
Nicholas Heller, Fabian Isensee, Klaus H. Maier-Hein, ..., Christopher Weight, Nikolaos Papanikolopoulos
Under Review, Medical Image Analysis

2019 *Public Perceptions of Artificial Intelligence and Robotics in Medicine*.
Bethany Stai, **Nicholas Heller**, Sean McSweeney, ..., Nikolaos Papanikolopoulos, Christopher Weight
Under Review, BJU International

2019 *The Role of Publicly Available Data in MICCAI Papers from 2014 to 2018*.
Nicholas Heller, Jack Rickman, Christopher Weight, and Nikolaos Papanikolopoulos
Oral Presentation, MICCAI LABELS Workshop, 2019

2019 *The KiTS19 Challenge Data: 300 Kidney Tumor Cases with Clinical Context, CT Semantic Segmentations, and Surgical Outcomes*.
Nicholas Heller, Niranjan Sathianathen, Arveen Kalapara, ..., Nikolaos Papanikolopoulos, Christopher Weight
arXiv preprint

2019 *Class Saliency Maps Reveal Computer Vision's Basis for Diagnosing Metastatic Carcinoma in Lymph Nodes*.
Nicholas Heller, Nikolaos Papanikolopoulos, Vassilios Morellas, and Alexander Truskinovsky
Platform Presentation, Annual Meeting of the US and Canada Academy of Pathology

2019 *Automatic R.E.N.A.L. nephrometry scoring using machine learning*.
Paul Blake, Niranjan Sathianathen, **Nicholas Heller**, Joel Rosenberg, Zachary Rengel, Keenan Moore, Heather Kaluzniak, Ed Walczak, Nikolaos Papanikolopoulos, and Christopher Weight
Poster, Annual Meeting of the European Association for Urology

2018 *Imperfect Segmentation Labels: How Much Do They Matter?*.
Nicholas Heller, Joshua Dean, and Nikolaos Papanikolopoulos
Oral Presentation, MICCAI LABELS Workshop, 2018

2018 *Computer Aided Diagnosis of Skin Lesions from Morphological Features*.
Nicholas Heller, Erika Bussmann, Aneri Shah, Joshua Dean, Nikolaos Papanikolopoulos
Technical Report

2018 *A Balance Cascade of Deep Neural Networks for CT Renal Segmentation*.
Nicholas Heller, Michael Tradewell, Joshua Dean, Vassilios Morellas, Nikolaos Papanikolopoulos, Niranjan Sathianathen, and Christopher Weight
Poster, Annual Meeting of the Engineering & Urology Society

2018 *Convolutional Neural Networks for Aircraft Noise Monitoring*.
Nicholas Heller, Derek Anderson, Matt Baker, Brad Juffer, Nikolaos Papanikolopoulos
Technical Report

2017 *A Web-Based Platform for Distributed Annotation of Computerized Tomography Scans*.
Nicholas Heller, Panagiotis Stanitsas, Vassilios Morellas, Nikolaos Papanikolopoulos
Poster, MICCAI LABELS Workshop, 2017

Service

Lead Organizer — 2019 MICCAI Kidney Tumor Segmentation Challenge (KiTS19); 2019 MICCAI LABELS Workshop; University of Minnesota "Medical Imaging With AI" (MIWAI) Journal Club.

Organizer — 2019 Annual Meeting of the Engineering and Urology Society.

Reviewer — International Conference on Medical Image Computing and Computer Assisted Interventions – MICCAI (2019); British Journal of Urology International – BJUI (2019 - present); International Conference on Robotics and Automation – ICRA (2019); IEEE Transactions on Intelligent Transportation Systems – IEEE-TMI (2018 - present); MICCAI LABELS Workshop (2018, 2019); Annual Meeting of the Engineering and Urology Society (2018, 2019).

Teaching

Spring 2018 — CSCI 2033, Elementary Computational Linear Algebra, *Head TA, Guest Lecturer*.

Fall 2017 — CSCI 5511, Artificial Intelligence 1, *Head TA, Guest Lecturer*.

Graduate Coursework

Completed — Biostatistics I, Special Advanced Topics in Robotics and Vision; Computer Vision; Architecture and Implementation of Database Management Systems; Error-correcting Codes, Finite Fields, and Algebraic Curves; Computational Aspects of Matrix Theory; Theory of Probability and Statistics; Introduction to Machine Learning; Analysis of Numerical Algorithms; Introduction to Research in Computer Science; Computer Science Colloquium.

Awards

Best Poster Award in Kidney, Ureter, and Adrenal session at SIU 2019.

Best Poster Award in Kidney Imaging session at EAU 2019.

ARCS Foundation Scholar.

Best Paper Nomination at MICCAI LABELS 2018.

UMN TA Professional Development Certification.

References

Nikolaos Papanikolopoulos
Distinguished McKnight Presidential
Endowed Professor
Computer Science and Engineering
University of Minnesota – Twin Cities

Victoria Interrante
Professor
Computer Science and Engineering
University of Minnesota – Twin Cities

Marvin Marshak
Distinguished Professor
Physics
University of Minnesota – Twin Cities

Christopher Weight
Associate Professor
Urologic Surgery
University of Minnesota – Twin Cities