Argyrios Christodoulidis, Ph.D.

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Education

2013–2017	Ph.D. in Computer Engineering	*Polytechnique Montréal, Canada*
Thesis title	*Segmentation and Characterization of Small Retinal Vessels in Fundus Images Using the Tensor Voting Approach*	
2010–2011	M.Sc. in Medical Image Computing	*University College London, U.K.*
Thesis title	*Tuberculosis: Learning from 3D CT to Aid Diagnosis from 2D X-rays*	
2004–2009	B.Sc. in Computer Science and Biomedical Informatics	*University of Thessaly, Greece*
Thesis title	*Segmentation and Width Measurements in Vessels from Ophthalmological Data*	

Work Experience

08/2017-Now Researcher *Diagnos Inc., Montréal, Canada*

- Research and development on automatic diabetic and hypertensive retinopathy grading systems for mass screening
- Pathology grading:
  - Building deep learning models for diabetic retinopathy grading
  - Research and implementation (C++) of general image features that improve the classification performance of the grading systems
- Image analysis and vessel segmentation:
  - Organized and supervised the process that led to the annotation of the vessels in a big dataset
  - Improved the retinal vessel segmentation performance of the systems by 10% using a deep learning method (CNNs)
  - Accelerated the retinal vessel annotation process by 50% using a deep learning technique to facilitate the data collection
  - Proposal of a deep learning method for the retinal image mask detection
- Development:
  - Productizing machine and deep learning models (C++/Python)
  - Updated the screening platform with a deep learning model for automatic classification of pathologies
- Delivered a R&D project proposal for a CAD system for CT lung imaging, and an industry showcase for a major conference for the retinopathy systems (finalist)

01-09/2012 Research Assistant *University of Thessaly, Greece*

- Development and publication in a conference of a toolkit that uses deformable surfaces for medical image segmentation
- Introduced and published in a conference an algorithm for background modelling of video sequences based on a modified median filtering method
- Implementation (Matlab) of feature extraction techniques from human silhouettes with the aim of human activity recognition

01-04/2010	Research Assistant	*Aristotelion University of Thessaloniki, Greece*

- Implementation of a spherical histogram algorithm for feature extraction from 3D face models
- Application of multi-class SVMs for classifying facial expressions

Summer 2008	Intern	*Dept. of Biomedical Tenchnology, General Hospital of Thessaloniki "Agios Dimitrios", Greece*

- Attendance of the operation of several medical devices in the departments of radiology (MRI, US, CT, X-rays, LINAC), microbiological laboratory, ophthalmology, intensive care, and the operation theater

Technical Skills and Softwares

Operating Systems	Linux, Microsoft Windows
Programming Languages	Matlab, C/C++, Python
Libraries and Toolkits	ITK library, OpenCV, Matlab-GUIDE, LIBSVM, Pandas, SciPy, NumPy, TensorFlow, PyTorch, version control (svn, git), familiar with bash, command line, and Makefile
Presentation suites	Open/Microsoft Office, LaTeX/beamer/TikZ

Publications and Communications

1. "A deep learning approach for fundus images mask detection", (under preparation)
2. "Automatic classification and triage of diabetic retinopathy from retinal images based on a convolutional neural networks (CNN) method", Acta Ophthalmological 2019 (contributed as a co-author)
3. **Argyrios Christodoulidis** "CARA, Computer Assisted Retinal Analysis", 2nd Industry Showcase, IEEE-EMBS International Conference on Biomedical and Health Informatics 2019 (Finalist)
4. Bilal Khomir, **Argyrios Christodoulidis**, et al. "Particle Swarm Optimization Method for Small Retinal Vessels Detection on Multi-resolution Fundus Images", Journal of Biomedical Optics 2018
5. Bilal Khomir, **Argyrios Christodoulidis**, et al. "Retinal Blood Vessel Segmentation Using the Elite-guided Multi-objective Artificial Bee Colony Algorithm", IET image processing 2018
6. **Argyrios Christodoulidis**, Thomas Hurtut, Houssem Ben Tahar, Farida Cheriet, "A Multi-scale Tensor Voting Approach for Small Retinal Vessel Segmentation in High Resolution Images", Computerized Medical Imaging and Graphics 2016
7. Bilal Khomir, **Argyrios Christodoulidis**, et al. "Particle Swarm Optimization Approach for the Segmentation of Retinal Vessels from Fundus Images", International Conference on Image Analysis and Recognition 2017
8. **Argyrios Christodoulidis**, Thomas Hurtut, Farida Cheriet, "Proliferative Diabetic Retinopathy Characterization Based on the Spatial Organization of Vascular Junctions in Fundus Images", International Symposium on Biomedical Imaging 2017 (selected for oral presentation)
9. **A. Christodoulidis**, K. K. Delibasis, I. Maglogiannis, "Near real-time human silhouette and movement detection in indoor environments using fixed cameras", Proceedings of the 5th International Conference on PErvasive Technologies Related to Assistive Environments 2012 (selected for oral presentation)
10. K. K. Delibasis, **A. Christodoulidis**, I. Maglogiannis, "An Intelligent Tool for Anatomical Object Segmentation Using Deformable Surfaces", Hellenic Conference on Artificial Intelligence, (SETN 2012) (selected for oral presentation)