PHILIPPE BURLINA

p b u r l i n a a t g m a i l d o t c o m

Johns Hopkins University / Applied Physics Laboratory / Principal Scientist
Johns Hopkins University / Dept. of Computer Science / Associate Professor (research)
Johns Hopkins University / School of Medicine, Wilmer Eye Institute / Joint Faculty
Johns Hopkins University / Malone Center for Engineering in Healthcare / Faculty

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SUMMARY My work is in the areas of **AI and machine intelligence algorithmic development**, including machine learning, deep learning, machine vision, and data science**.** My areas of focus are: generative models, online learning, domain adaptation, low-shot learning, anomaly detection, AI assurance including machine deception, adversarial machine learning, and addressing bias and privacy in AI. I lead teams and design AI algorithms that are impactful for problems in healthcare and robotics. Publications: bit.ly/burl_papers

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WORK

- 2004-present: **Principal scientist**, **JHU/APL**, Laurel, MD. Technical lead and technical contributor on various projects focused on AI algorithmic development with applications to machine vision and healthcare.
- 2018-present: **Faculty**, **JHU Malone Center for Engineering in Healthcare,** Baltimore, MD.
- 2012-present **Associate Professor (research)**, **JHU Dept. of Computer Science,** Baltimore, MD.
- 2011-present: **Faculty**, **JHU School of Medicine,** Baltimore, MD.
- 2006-2011: **Assistant Professor (research)**, **JHU Dept. of Computer Science,** Baltimore, MD.
- 2004-2012: **Section supervisor**, **JHU/APL.** Laurel, MD, machine vision. Assistant group supervisor, physics and modeling.
- 2002-2004: **Director** of **Software Development. FileNet (IBM),** Costa Mesa, CA. Technical lead for group of 25+ software developers developing an enterprise web content management platform.
- 2000-2002: Co-founder and **Vice-President of Engineering**. **eGrail**, Bethesda, MD. Technical and line manager for 25+ person team of software engineers developing an enterprise content management platform.
- 1997-2000: Co-founder and **R&D technical lead**: **ImageCorp**, Inc., College Park, MD. Lead team developing Computer Vision and machine learning systems, Greenbelt, MD.

EDUCATION

- **Ph.D.**, **Electrical Engineering, University of Maryland at College Park, Computer Vision Lab** (1994): Ph.D. Dissertation on Computer Vision, with focus on visual navigation and estimation of 3D structure.
- **M.S.**, Electrical Engineering, University of Maryland at College Park, Communications and Control (1991)
- **B.S.** (Diplome d'Ingenieur), Computer Science, Université de Technologie de Compiegne, France (1988)
- University of Pennsylvania, Moore School of Engineering, (1985-1986)

PROFESSIONAL SOCIETY MEMBERSHIP, SERVICE, ORGANIZATION, INVITED TALKS

- Chair, AIRIA: 2018 Workshop on Artificial Intelligence applied to Retinal Image Analysis, held in conjunction with ACCV 2018, Perth, AU, 2018. https://resvirtualis.github.io/airia2018/
- Recent invited/keynote presentations: DRCR 2018, APTOS 2018, U. Kyoto (2018), U. Nagoya (2018), …
- IEEE: Senior Member
- Technical reviewer for various technical journals (IEEE Trans. Pattern Analysis and Machine intelligence, IEEE Trans. On Medical Imaging, IEEE Trans. Image Processing, IEEE Trans. GRS, MICCAI's Medical Image Analysis,…) and conferences on Machine Vision and Biomedical Imaging (MICCAI, ISBI, IGARS, IEEE Computer Vision and Pattern Recognition)
- Member: Medical Imaging Computing and Computer Assisted Intervention Society.
- NIH Biomedical Imaging Technology Study Section, member, 2014.

TEACHING

- 2017-present: designed/taught class on deep Learning https://ep.jhu.edu/programs-and-courses/525.733-deep-vision
- 2013-2016: real time machine vision

DOMAIN KNOWLEDGE/CODING/LANGUAGES/OTHER

- **Deep Learning and computer vision frameworks:** Keras, pytorch, sci-kit learn + various other python ML and data science packages, Caffe, OpenCV, ...
- **Domain knowledge:** Machine learning and machine vision, deep learning, image/video analysis, machine intelligence, data science, medical image analysis, biomedical imaging, signal and image processing, multi-media and multi-image modality exploitation (electro-optic, video, hyperspectral, scanning electron microscopy) estimation/detection/tracking; Enterprise software systems; content and record management, e-process/workflow management, authentication, authorization, deployment engines.
- **Software Languages/scripts/frameworks**: Python, Matlab, C/C++, PHP, Java, Mathematica.
- **Software development lifecycle (SDLC):** agile, extreme programming.
- **Frameworks:** LAMP (Linux, Apache, MySQL, PHP), J2EE.
- **SCM/IED/design:** PyCharm, eclipse, visual studio, Visio, IBM Rational ClearQuest, TeamTrack, Git, cvs, svn;
- **DBMS**: MySQL, MS SQL Server, Oracle, and other

FOREIGN LANGUAGES Fluent in French and Italian, some Spanish.

PATENTS

Full list: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C21&q=philippe+burlina+patent&btnG=
Selected list:

- Systems and methods for remote tagging and tracking of objects using hyperspectral video sensors (US8295548)
- System and method for automated detection of age-related macular degeneration and other retinal abnormalities (US8896682)
- Automated pneumothorax detection (US Patent 8,914,097, 2014)
- Hyperspectral imaging for detection of skin related conditions (US Patent 8,761,476, 2014)
- Patient-Specific Segmentation, Analysis, and Modeling from 3-Dimensional Ultrasound Image Data (Patent App. 13/609,476, 2012). System and method of managing web content (US20040216084)
- Systems and methods for determining eye glances (US20020176604)
- Content manager integration (US20040225730)
- Ventriculoperitoneal shunt with pressure responsive element (US Patent 9,993,631)
- Object Recognition and Presentation for the Visually Impaired (US Patent App. 15/671,696)

PUBLICATIONS

bit.ly/burl_papers

selected/recent papers:

Burlina, Joshi, Pacheco, Liu, Bressler, Assessment of deep generative models, *JAMA Ophthalmology*, 2019
Burlina, Joshi, Wang, Where's Wally Now? Deep Generative and Discriminative Embeddings for Novelty Detection, *Proc. CVPR (IEEE Conference on Computer Vision and Pattern/main conference paper)*, 2020.
Ting, Liu, Burlina, Xu, Bressler, Wong, AI for medical imaging goes deep, *Nature medicine*, 24 (5), 539, 2018.
Staley, Katyal, Burlina, DRL Based Intelligent Joint Manipulator and Viewing Camera Control for Reaching Tasks and Environments with Obstacles and Occluders, *IJCNN*, 2018.
Burlina, Joshi, Pekala, Pacheco, Freund, Bressler, Automated grading of AMD from color fundus images using DCNNs, *JAMA Ophthalmology*, 2017.

HOBBIES: Experimenting with software frameworks**,** cycling, yoga.