GIACOMO NEBBIA

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SUMMARY

I am looking for job opportunities in deep learning for computer vision to apply the knowledge on object detection and classification I have accumulated during my PhD and my internship at Hologic (a leading company in women's health). Driven, pro-active, and always looking for ways to further improve (myself and my solutions), I have gained experience on independently coming up with ideas, implementing them, and interpreting and regularly reporting results, while also integrating other interns' or fellow PhD students' work and receiving feedback from mentors.

EDUCATION

PhD - Intelligent Systems Program (ISP) - *University of Pittsburgh* — December 2023

- Thesis: *Image-caption alignment and object naming variability as supervision for multi-modal object detection*. Advisor: Adriana Kovashka, PhD

Masters' Degree in Bioengineering - *University of Pavia (Italy)* — September 2014

- Thesis: *Design and implementation of an algorithm for validation and expansion of multigenerational pedigrees*. Advisors: Cristiana Larizza, PhD (University of Pavia), Paola Sebastiani, PhD (Boston University)

Bachelor's Degree in Bioengineering - *University of Pavia (Italy)* — September 2012

SKILLS

- Programming Languages: python, Java, MatLab, R, C
- Deep Learning packages: pytorch, keras (TensorFlow 2)
- Project Management: GitHub, Docker, Weights & Biases
- Database Management Systems: PostgreSQL, MySQL
- Spoken Languages: Italian (native), English (proficient), Spanish (basic)

RESEARCH/WORK EXPERIENCE

PhD candidate, Intelligent Systems Program, University of Pittsburgh — 9/2021 – 12/2023

Supervisor: Adriana Kovashka, PhD

- Trained Weakly-supervised/open vocabulary object detection models from image captions
- Trained multi-modal (images and text) approaches for object detection
- Implemented Curriculum learning approaches for efficient (pre)training of multi-modal models

Machine Learning Research Intern, Hologic — 6/2021 – 8/2021

Supervisors: Adora Dsouza, PhD, Xiangwei Zhang, PhD, Haili Chui, PhD

- Designed and trained Deep Learning models for breast cancer diagnosis and detection from Digital Breast Tomosynthesis images
- Conducted daily scrum meetings with mentor, weekly group meetings, and 3 milestone meetings with whole lab

PhD student, Intelligent Systems Program, University of Pittsburgh — 7/2018 – 5/2021

- Implemented Deep Learning models for breast cancer classification and detection from screening mammograms
- Implemented Deep Learning models for Hepatocellular Carcinoma (HCC) segmentation from pre- and post-contrast MRI sequences
- Implemented radiomics-based Machine Learning methods for diagnosis of HCC
- Assisted fellow students with projects on Pneumatosis Intestinalis from abdominal CT, bone fracture from X-ray scans

Research Assistant / Software Developer, Questfactory & University of Pavia — 9/2015 – 7/2016

- Researched and developed Topic Modeling (Latent Dirichlet Allocation) for unsupervised classification of social media posts
- Developed a software pipeline based on KNIME Analytics to automate the generation of reports comparing the social media presence of companies in a given field

Research Assistant, Boston University & University of Pavia — 3/2014 – 8/2014

- Developed a software in Java to mine U.S. censuses and familysearch.com user-provided family trees to expand centenarian pedigrees

PUBLICATIONS

- **Nebbia, Giacomo**, and Adriana Kovashka, "Synonym relations affect object detection learned on vision-language data", under review

- **Nebbia, Giacomo**, and Adriana Kovashka, "Image-caption difficulty for efficient weakly-supervised object detection from in-the-wild data", under review

- **Nebbia, Giacomo**, and Adriana Kovashka. "Hypernymization of named entity-rich captions for grounding-based multi-modal pretraining." Proceedings of the 2023 ACM International Conference on Multimedia Retrieval. 2023. ** best paper award winner **

- **Giacomo Nebbia,** Adriana Kovashka; *Doubling Down: Sparse Grounding With an Additional, Almost-Matching Caption for Detection-Oriented Multimodal Pretraining* Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2022, pp. 4642-4651

- **Nebbia, G.**, Dadsetan, S., Arefan, D., Zuley, M.L., Sumkin, J.H., Huang, H. and Wu, S., 2021, September. Radiomics-Informed Deep Curriculum Learning for Breast Cancer Diagnosis. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 634-643). Springer, Cham.

- **Giacomo Nebbia**, Dooman Arefan, Margarita Zuley, Jules Sumkin, Shandong Wu. *Multi-task learning to incorporate clinical knowledge into deep learning for breast cancer diagnosis*. SPIE Medical Imaging. Feb. 14-18, 2021

- Jacob Yousef, **Giacomo Nebbia**, Roberta Catania, Biatta Sholosh, Senthur Thangasamy, Kalina Chupetlovska, Satdarshan P Monga, Shandong Wu, Alessandro Furlan. *Multivariate analysis of radiological predictors of beta catenin mutation status in hepatocellular carcinoma (HCC) according to the Liver Imaging Reporting and Data System (LI-RADS),* European Congress of Radiology, March, 3-7 2021

- Rafael Ramos, Esmaeel Dadashzadeh, **Giacomo Nebbia**, Graciela Bauza, Shandong Wu (2019) *Rib Fracture Patterns Associated with Diaphragmatic Injury: A Retrospective Review.* 2019 Chest Wall Injury Summit, March 28-30, Santa Fe (NM)

- **Giacomo Nebbia**, Aly A. Mohamed, Ruimei Chai, Bingjie Zheng, Margarita Zuley, Shandong Wu (2019) *Deep learning of sub-regional breast parenchyma in mammograms for localized breast cancer risk prediction.* Poster at the 2019 SPIE Computer-Aided Diagnosis conference, February 17-20, San Diego (CA).

- **Giacomo Nebbia**, Esmaeel Dadashzadeh, Caroline Rieser, Shandong Wu (2019) *Going beyond MELD: A data-driven mortality predictor for liver transplantation waiting list.* 14th Annual Academic Surgical Congress, February 5-7 2019, Houston (TX)

- Dadashzadeh, Esmaeel Reza, Patrick Bou-Samra, Lauren V. Huckaby, **Giacomo Nebbia**, Robert M. Handzel, Patrick R. Varley, Shandong Wu, and Allan Tsung. "Leveraging Decision Curve Analysis to Improve Clinical Application of Surgical Risk Calculators." *Journal of Surgical Research* 261 (2021): 58-66. https://doi.org/10.1016/j.jss.2020.11.059

- **Nebbia, Giacomo**, Qian Zhang, Dooman Arefan, Xinxiang Zhao, and Shandong Wu. "Pre-operative Microvascular Invasion Prediction Using Multi-parametric Liver MRI Radiomics." *Journal of Digital Imaging* (2020). https://doi.org/10.1007/s10278-020-00353-x

- **Giacomo Nebbia**, Lisa Nussbaum, Annie Helmkamp, Stacy Andersen, Thomas Perls & Paola Sebastiani (2018) *Manual and Automated Procedures for Compiling a Very Large Sample of Centenarian Pedigrees*, North American Actuarial Journal, DOI: 10.1080/10920277.2018.1462716