FAGNER CUNHA

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EDUCATION

2019 – Present
Expected 12/2025

Ph.D. in Informatics (in progress) **Federal University of Amazonas**
Advisor: Eulanda Miranda
Co-Advisor: Juan Colonna
This work improves camera-trap image analysis with deep learning, addressing species identification, counting, and empty-frame filtering under real-world challenges like long-tail data and domain shift.

2017 – 2019
M.Sc. in Informatics **Federal University of Amazonas**
Advisor: Eulanda Miranda
Co-Advisor: Juan Colonna
Thesis title: Um estudo sobre abordagens para avaliação out-of-sample de modelos de classificação de animais em imagens de armadilhas fotográficas

2009 – 2015
B.Sc. in Computer Engineering **Federal University of Amazonas**
Embedded Software Engineering, Machine Learning

2006 – 2008
Technician in Electronics **Federal Institute of Education, Science and Technology of Amazonas**
Technical High School

EXPERIENCE

2022 – 2024
Collaborating Researcher **Mila - Quebec Artificial Intelligence Institute**
Research and development of CV models for insect identification; Rolnick Lab.

2022 – 2024
Artificial Intelligence Intern **eButterfly**
Model development for butterfly species identification, with dataset curation and integration of geo-priors for fine-grained classification.

2021 – 2023
Undergraduate Research Mentor **IComp - UFAM**
Mentoring of undergraduate students in the Samsung UFAM Project for Education and Research (SUPER).

2017 – 2018
Computer Vision Research Assistant **Mamiraua Institute**
CV researcher on Project Providence: developed and optimized animal species classifiers for embedded camera-trap systems.

2015 – 2017
Computer Engineer **IATECAM**
Embedded software engineer with focus on Altera FPGA systems: hardware design with Qsys, Linux driver/app development.

2013 – 2015
Software Developer **CETELI - UFAM**
Front-end Android development for Samsung R&D (SIDIA)

2012 – 2013
Embedded Software Engineer Intern **Map Innovation**
Developed industrial data collection systems

2008 – 2008
Electronic Engineering Intern **Terra da Amazonia Ltda**
Supported motherboard production as manufacturing test engineer

2021	**1st Place in the iWildCam 2021 Challenge**	**CVPR - FGVR Workshop**

Count the number of animals of each species present in a sequence of images.

2012	**Best Paper Award at the Workshop of Undergraduate Research**	**SBSEG**

Detecção de Phishing em Páginas Web Utilizando Técnicas de Aprendizagem de Máquina.

2011	**Professor Abraham Moysés Cohen Award**	**Federal University of Amazonas**

Best undergraduate research work in Exact Sciences at the XIX Congress of Scientific Initiation for the work: Detecção de Phishing em Páginas Web.

2006	**Honorable Mention**	**Brazilian Public Schools Mathematics Olympiad**

Honorable Mention – Level 3 (High School)

2005	**Silver Medal**	**Brazilian Public Schools Mathematics Olympiad**

Silver Medal - Level 2 (Grades 5 to 8)

PUBLICATIONS
(* denotes equal contribution)

Journal Publications

1. Roy, D. B., Alison, J., August, T. A., Bélisle, M., Bjerge, K., Bowden, J. J., Bunsen, M. J., **Cunha, F.**, Geissmann, Q., Goldmann, K., Gomez-Segura, A., Jain, A., Huijbers, C., Larrivée, M., Lawson, J. L., Mann, H. M., Mazerolle, M. J., McFarland, K. P., Pasi, L., Peters, S., Pinoy, N., Rolnick, D., Skinner, G. L., Strickson, O. T., Svenning, A., Teagle, S., & Høye, T. T. (2024). Towards a standardized framework for AI-assisted, image-based monitoring of nocturnal insects. Philosophical Transactions of the Royal Society B, 379(1904), 20230108.

2. **Cunha, F.**, dos Santos, E. M., & Colonna, J. G. (2023). Bag of tricks for long-tail visual recognition of animal species in camera-trap images. Ecological Informatics, 76, 102060.

3. dos Santos, E. M., **Cunha, F.**, Colonna, J. G., & Carvalho, J. R. (2023). Monitoramento Ambiental Não Invasivo Utilizando Dados de Sensores e Técnicas de Aprendizagem de Máquina. Computação Brasil, (50), 24-28.

Conference Publications

1. Jain, A.*, **Cunha, F.**,* Bunsen, M. J.*, Cañas, J. S., Pasi, L., Pinoy, N., Helsing, F., Russo, J., Botham, M., Sabourin, M., Fréchette, J., Anctil, A., Lopez, Y., Navarro, E., Perez Pimentel, F., Zamora, A. C., Ramirez Silva, J. A., Gagnon, J., August, T., Bjerge, K., Gomez Segura, A., Bélisle, M., Basset, Y., McFarland, K. P., Roy, D., Høye, T. T., Larrivée, M., & Rolnick, D. (2024). Insect identification in the wild: The AMI dataset. In European Conference on Computer Vision (pp. 55–73). Cham: Springer Nature Switzerland.

2. Alencar, L., **Cunha, F.**, & Dos Santos, E. M. (2024). Zero and Few-Shot Learning with Modern MLLMs to Filter Empty Images in Camera Trap Data. In 2024 37th SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI) (pp. 1-6). IEEE.

3. Alencar, L., **Cunha, F.**, & dos Santos, E. M. (2023). A context-aware approach for filtering empty images in camera trap data using siamese network. In 2023 36th SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI) (pp. 85-90). IEEE.

4. Fonseca, V. L., **Cunha, F.**, Andrade, L., Colonna, J. G., & De Yong, D. (2023). Classification of Tropical Disease-carrying Mosquitoes Using Deep Learning and SHAP. In Simpósio Brasileiro de Computação Aplicada à Saúde (SBCAS) (pp. 25-34). SBC.

5. Medeiros, V. P., **Cunha, F.**, dos Santos, E. M., & Souto, E. (2022). Um Modelo de Aprendizado Profundo Multimodal para Classificação de Estresse Utilizando Sinais Obtidos por Dispositivos Vestíveis de Pulso. In Simpósio Brasileiro de Computação Aplicada à Saúde (SBCAS) (pp. 370-380). SBC.

6. Queiroz, D., **Cunha, F.**, Souza, L. R., & Colonna, J. G. (2022). Investigando a relação entre os aminoácidos de proteínas do vírus da dengue e o desfecho clínico do paciente. In Simpósio Brasileiro de Computação Aplicada à Saúde (SBCAS) (pp. 92-97). SBC.

7. Jacinto, L. M., Chateaubriand, A. D., Evangelista, M. R., Schultz, V. P., Jacinto, O. M., **do Rego Cunha, F. F.**, & Rodrigues, D. L. (2013). Estudos para o desenvolvimento de um ambiente saudável em uma universidade amazônica: A experiência de alunos de engenharia e design. In Proceedings of the Safety, Health and Environment World Congress (Vol. 13, pp. 304–308).

Preprints and Workshop Papers

1. Jain, A.*, **Cunha, F.***, Bunsen, M.*, Pasi, L., Viklund, A., Larrivée, M., & Rolnick, D. (2023). A machine learning pipeline for automated insect monitoring. NeurIPS 2023 Workshop on Tackling Climate Change with Machine Learning. arXiv preprint arXiv:2406.13031.

2. **Cunha, F.**, dos Santos, E. M., Barreto, R., & Colonna, J. G. (2021). Filtering empty camera trap images in embedded systems. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops (pp. 2438-2446).

3. **Cunha, F. F. R.**, dos Santos, E. M., & Souto, E. (2012). Detecção de phishing em páginas web utilizando técnicas de aprendizagem de máquina. In Proceedings of the IV Workshop de Trabalhos de Iniciação Científica e de Graduação, Anais do XII Simpósio Brasileiro em Segurança da Informação e de Sistemas Computacionais (pp. 491–500). Curitiba, Brazil.

LANGUAGES

Portuguese Native speaker
English Professional working proficiency