NILS MURRUGARRA

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SUMMARY

Expert in computer vision, machine learning, and natural language processing using different programming languages like C++, java, python and web technologies as PHP, HTML, JavaScript, and mysql. In addition, experienced in research, programming and teaching.

EDUCATION

University of Pittsburgh, Pittsburgh, PA	Expected Graduation: Apr 2019
Doctor in Computer Science, Computer Vision	GPA: 3.8
University of São Paulo, São Carlos, SP, Brazil	2009 - 2011
Master in Computer Science, Machine Learning	GPA: 4.0
National University of Trujillo, Trujillo, Peru	2004 - 2009
Bachelor in Computer Science	GPA: 3.6

SKILLS

Programming languages: Python, R, Java, C/C++, Matlab, android SDK, Prolog, and Scheme

Tools: tensorflow, theano, keras, caffe, github, weka, liblinear, libsvm, scikit-learn library, slim, amazon mechanical turk

Scripts: HTML, PHP, JSP, JavaScript, linux shell

Technologies: deep learning, reinforcement learning, transfer learning, metric learning, PCA, LDA.

IDEs: NetBeans, PyCharm, Eclipse, Visual C++

Databases: SQL, MySQL, PostgreSQL

RELEVANT GRADUATE COURSES

- Machine learning
- Natural language processing
- Pattern recognition
- Advanced machine learning
- Advanced artificial intelligence (Computer vision)

PROFESSIONAL EXPERIENCE

ASEA Brown Boveri (ABB), Raleigh, NC, USA.

Deep learning intern   May - Jul 2017

- Automatized image industrial application from model training on a GPU server to deployment in a Raspberry PI.
- Improved accuracy from 80% to 90% on rusty hazard recognition. Presented results to managers and stakeholders in the company.
- Worked on data collection, annotation, model training, evaluation, and deployment.

Educational Testing Service (ETS), Princeton, NJ, USA.

Research intern   Jun - Jul 2014

- Contributed new features to manage big data, reduce memory consumption and work with imbalance data for the open source machine learning SKLL platform, widely employed in ETS.
- Made possible the use of a big prepositional dataset (4 GB) for machine learning and natural language techniques.

Computer Science Student Society, Trujillo, Peru.

Software developer   Apr-Jun 2009 / Apr-Sep 2010

- Developed a web platform for Automatic Programming Contests (codeSECC) and a web platform for online exams with automatic grading. All these projects were developed using PHP, javascript, and mysql.
- Platform used for the I Peruvian Programming Contest.

RESEARCH EXPERIENCE

Laboratory of Computer Vision, University of Pittsburgh, Pittsburgh, PA, USA.

Research assistant   Jan 2015 - Current

- Conceived, developed and implemented new algorithms in computer vision, deep learning, and reinforcement learning.
- Published three articles and one under review in highly ranked computer vision and machine learning conferences.

Laboratory of Computational Intelligence, University of São Paulo, São Carlos, SP, Brazil.

Research assistant   Aug 2009 - Sep 2011

- Conceived, developed and implemented a new graph-based machine learning classifier.
- Developed a platform for machine learning experiments using the Java, weka and netkit.
- Wrote and published four articles for conferences in Greece, Brazil, and Peru.

SELECTED PROJECTS

Cross-modality personalization for retrieval (2018)

Developed a model for study how a person's way of looking at an image (gaze) affects the way they describe it (captioning). Improved accuracy [Python, tensor-flow and slim]

Image retrieval with mixed initiative and multimodal feedback (2018)

Developed an image retrieval system using reinforcement learning to combine: drawing a sketch, providing free-form attribute feedback, or answering attribute-based questions. Improved accuracy on simulated and live users [Python, keras, theano, and tensor-flow]

Non-semantic attribute transfer (2017)

Developed a non-semantic transfer approach from attributes in different domains. Improved accuracy, interpretability and analysis. [Python, keras, theano, and caffe]

Learning attributes from human gaze (2016)

Developed and evaluated how to involve humans more directly in learning attribute models through gaze maps. Improved accuracy, visualization and attribute understanding [Matlab, python, and caffe]

NLP projects (2011-2013)

Developed an automatic student answer grading system, a language identification system and a comparison tool for collegiate computing curriculums. NLP techniques include bag-of-words, latent semantic analysis, unigrams, bigrams, trigrams and hierarchical clustering. [Python, java, and R]

Face recognition using PCA, LDA and spectral clustering (2014)

Developed a face recognition system using PCA, LDA and Spectral clustering. [Python and Scikit-learn library]

Automatic isolated words speech recognizer (2009)

Developed a tool for automatic speech recognition using ten spoken digits. Achieved accuracy higher than 95%. [Java]

Feature selection in stock market prediction (2012)

Developed a tool to explore feature selection in the problem of stock market prediction. Feature selection achieved similar performance than whole features [R]

PUBLICATIONS

1. Image retrieval with mixed initiative and multimodal feedback. **N. Murrugarra-Llerena** and A. Kovashka. In LatinX in AI research workshop. 32nd Conference on Neural Information Processing Systems (NIPS), 2018.

2. Image retrieval with mixed initiative and multimodal feedback. **N. Murrugarra-Llerena** and A. Kovashka. In British Machine Vision Conference (BMVC), 2018. **(oral)**

3. Asking friendly strangers: non-semantic attribute transfer. **N. Murrugarra-Llerena** and A. Kovashka. In 32nd AAAI Conference on Artificial Intelligence (AAAI), 2018.

4. Learning attributes from human gaze. **N. Murrugarra-Llerena** and A. Kovashka. In IEEE Winter Conference on Applications of Computer Vision (WACV), 2017.

5. Isolated words recognition using a low-cost microcontroller. C. González-Cadenillas and **N. Murrugarra-Llerena**. In III Brazilian Symposium on Computational Systems Engineering (SBESC), 2013.

6. Graph-based cross-validated committee ensembles. **N. Murrugarra-Llerena**, L. Berton, and A. de Andrade Lopes. In 2012 Fourth International Conference on Computational Aspects of Social Networks (CASoN), 2012.

7. An adaptive graph-based k-nearest neighbor. **N. Murrugarra-Llerena** and A. de Andrade Lopes. In CoLISD: Collective Learning and Inference on Structured Data, 2011. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD).

8. A graph-based bagging. **N. Murrugarra-Llerena** and A. de Andrade Lopes. In CoLISD: Collective Learning and Inference on Structured Data, 2011. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD).

9. Comparison of computing curriculums using text hierarchical clustering. **N. Murrugarra-Llerena**, F. Alva-Manchego, and S. Oliveira Rezende. In XXXI Congress of the Brazilian Computer Society (CSBC), 2011.

10. 3D surface reconstruction applied to medical imaging. **N. Murrugarra-Llerena**, O. Fernandez-Asunción, and L. Castañeda-León. In VII Peruvian Conference on Computing (JPC-2008), 2008.

11. Detection of fish eye disease in olives using graphics processing. F. Carranza-Athó and **N. Murrugarra-Llerena**. In VI Peruvian Conference on Computing (JPC-2007), 2007.

HONORS AND AWARDS

Art and science full merit fellowship (A&S). University of Pittsburgh, USA. (Sep-Dec 2012)

IMPA fellowship (Summer Course). National Institute of Pure and Applied Mathematics (IMPA), Brazil. (Jan - Feb 2012)

Honorable mention. ACM - International Collegiate Programming Contest (ACM-ICPC), Coach. Peru. (Nov 2011)

PAE fellowship (Education Improvement Program). University of São Paulo, Brazil. (Feb - Jun 2011)

Master fellowship. University of São Paulo, CNPQ, Brazil. (Aug 2009 – Aug2011)

1st place in undergraduate studies in Computer Science. National University of Trujillo, Peru. (2004–2009)

1st place in the 3rd Computer Programming Marathon. National University of Trujillo, Peru (Sep 2005)

Four travel awards to conferences including NeurIPS, AAAI, Latam and SPAS-eScience from 2012 to 2018.