Julien Lerouge

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R&D software engineer
Machine learning, image processing, text recognition (OCR/ICR), statistical language modeling
6 years of work experience (28 y.o.)

Work experience

A2iA (Mitek)	since 2016/05	**R&D engineer** : Design and development of custom solutions at the forefront of technology in text recognition (RNN, language models), document classification and document analysis. Development of new features linked to handwritten and printed recognition (OCR, ICR), and image processing, for a2ia TextReader™ and a2ia DocumentReader™ (e.g. development of Japanese and Korean recognition, development of recognizers dedicated to alpha-numeric fields). (Python, C++, OpenCV, Kaldi)
LITIS	2013/09 - 2016/04	**R&D engineer** : In the context of the "PIVAJ" project. Development of a software dedicated to structural analysis, article segmentation and text recognition (OCR) for scanned images of old newspapers. Development of an online demo allowing to search, view and collaboratively correct articles content. (C++, Qt, OpenCV, J2EE, HTML5, CSS, JS) **Research engineer** : Design and development of structural pattern recognition algorithms (graph edit distance, subgraph isomorphism…), using integer linear programming. Implementation of formulations on various mathematical solvers. Application to symbol spotting in floor plans and to information retrieval in colour forms. (C++, Qt, CPLEX, Gurobi, GLPK, Leptonica, OpenCV).
Centre Henri Becquerel / LITIS	2013/03 - 2013/08	**Intern researcher** : Development of a basic deep learning framework, using Python and Theano, named Crino. Application to segmentation of muscular tissues in medical images (CT Scan). Development of a medical diagnosis-helping software to measure the degree of sarcopenia of patients. (Matlab, Python, Theano)

Education

University of Rouen	2012/09 - 2013/08	Master's degree in Computer Science (*Multimedia Information Processing Systems*)
INSA Rouen	2010/09 - 2013/08	Engineer's degree in Computer Science (*Information Systems Architecture*, with data science specialty)

Skills

OS	**GNU\Linux**, Windows
Programming	C, **C++** (Qt), **Python**, Matlab, Bash
Image processing	**OpenCV**, **ImageMagick**, **GIMP**, PaintShop Pro
Web	**HTML5**, **CSS**, Javascript, Apache 2
Document processing	**LaTeX**, LibreOffice, MS Office
Version control	**Git**, **Mercurial**, SVN
Languages	**French** : mother tongue **English** : full professional proficiency **German** : limited professional proficiency (work experience of 3 months in Germany in 2012)
Scientific knowledge	**Machine learning** (deep neural networks, CRF…), **document layout analysis**, **text recognition**, statistical language modeling, medical image processing, graph edit distance and subgraph isomorphism.

Relevant Publications

- J. Lerouge, Z. Abu-Aisheh, R. Raveaux, P. Héroux and S. Adam, "New binary linear programming formulation to compute the graph edit distance". Pattern Recognition, vol. 72, pp. 254-265, 2017.
- W. Swaileh, J. Lerouge and T. Paquet, "A Unified French/English syllabic model for handwriting recognition", Proceedings of ICFHR 2016, Shenzhen, China, October 23-26, 2016.
- J. Lerouge, R. Hérault, C. Chatelain, F. Jardin and R. Modzelewski, "IODA: An input/output deep architecture for image labeling" , Pattern Recognition, vol. 48, iss. 9, pp. 2847-2858, 2015.
- P. Tranouez, S. Nicolas, J. Lerouge, T. Palfray, D. Hébert, and T. Paquet, "PIVAJ: An Article-Centered Platform for Digitized Newspapers", Archiving 2015, Los Angeles CA, May 19-22, 2015.
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