

Reuben DORENT

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🌐 ReubenDo

EDUCATION

July 2022 - present	Postdoctoral Research Fellow, Department of Neurosurgery, Brigham and Women's Hospital, Harvard Medical School, United States Registration of pre/intra/post operative MR and ultra-sound images for image-guided brain surgery. Advisors: Prof. Alexandra J. Golby, Dr. Tina Kapur, Prof. Sandy Wells.
Oct. 2018 - July 2022	PhD Student, BMEIS, King's College London, United Kingdom Collaborative learning of joint tasks from various medical centres with local resources. Rooted in several sub-domains of deep learning: hierarchical deep generative models, domain adaptation, weakly-supervised learning, structured predictions. Advisors: Prof. T. Vercauteren, Prof. S. Ourselin.
SEPT. 2017 - MAY 2018	Master of Science in COMPUTER VISION AND MACHINE LEARNING (Mathématiques, Vision, Apprentissage), École Normale Supérieure Paris-Saclay, France - Highest Honours Probabilistic Graphical Models, Kernel Methods, Object recognition, Discrete Inference and Learning.
SEPT. 2014 - MAY 2018	Master of Science in APPLIED MATHEMATICS, École Centrale Paris, France Top-tier French engineering school providing elite researchers and industry executives. Major in: Theory of Probabilities, Modern Applied Statistics, Optimisation, Reinforcement Learning.

RESEARCH & WORK EXPERIENCE

MAY 2022 - JULY 2022	Research Scientist Intern, Hypervision Surgical, London Developed a deep learning-based image demosaicking algorithm for snapshot hyperspectral images.
MAY 2018 - OCT. 2018	Research Intern, WEISS, University College London Developed a new approach to perform joint brain tissue and lesion segmentation. Long Oral presentation at MIDL2019. Advisor: Prof. T. Vercauteren.
OCT. 2017 - APR. 2018	Master Research Project Leader, Cardiologs, Paris Part of the Research and Development team. ECG Clustering via Community Detection.
JAN. 2017 - JULY 2017	Software Engineering Intern, FrenchFounders, New York Developed and implemented matching algorithms for a networking platform with 2,000 premium business profiles (C-Level, entrepreneurs, VCs). Combined various sources of information (platform logs, text profile descriptions, event attendances).
JULY 2016 - DEC. 2016	Research Scientist Intern, Enedis, Paris Created new consumer profiles for personalised consumption estimation of French electricity suppliers. Analysed data from 3 million smart electricity meters using time-series and statistical analysis.
SEPT. 2015 - DEC. 2016	Mathematics Teaching Assistant, Lycée Condorcet, Paris Oral examiner for students preparing French competitive entrance exams.

PROFESSIONAL SKILLS

LANGUAGES: FRENCH (Native) - ENGLISH (Proficient) - GERMAN (Basic knowledge)
COMPUTER PROGRAMMING: Python - including PyTorch, TensorFlow -, Matlab, R, Java

PUBLICATIONS

Peer-reviewed Journals

- Dorent, R, et al (2023). CrossMoDA challenge: Benchmark of Cross-Modality Domain Adaptation techniques for Vestibular Schwannoma and Cochlea Segmentation. *Medical Image Analysis*, 83, 102628. doi:10.1016/j.media.2022.102628
- Kujawa, A., Dorent, R., Connor, S., Ovidova, A., Okasha, M., Grishchuk, D., Ourselin, S., Paddick, I., Kitchen, N., Vercauteren, T. Shapey, J. (2022). Automated Koos Classification of Vestibular Schwannoma. *Frontiers in Radiology* 2:837191. doi:10.3389/fradi.2022.837191
- Perez-Garcia, F., Dorent, R., Rizzi, M., Cardinale, F., Frazzini, V., Navarro, V., ..., Ourselin, S. (2021). A self-supervised learning strategy for postoperative brain cavity segmentation simulating resections. *International Journal of Computer Assisted Radiology and Surgery*, 16(10), 1653-1661. doi:10.1007/s11548-021-02420-2

4. Shapey, J., Kujawa, A., **Dorent, R.**, Wang, G., Dimitriadis, A., Grishchuk, D., Paddick, I., Kitchen, N., Bradford, R., Saeed, S., Bisdas, S., Ourselin, S., Vercauteren, T. (2021). Segmentation of vestibular schwannoma from MRI, an open annotated dataset and baseline algorithm. *Nature Scientific Data*, 8, 286. doi:10.1038/s41597-021-01064-w
5. **Dorent, R.**, Booth, T., Li, W., Sudre, C. H., Kafiabadi, S., Cardoso, J., ..., Vercauteren, T. (2021). Learning joint segmentation of tissues and brain lesions from task-specific hetero-modal domain-shifted datasets. *Medical Image Analysis*, 67, 101862. doi:10.1016/j.media.2020.101862 Code: <https://github.com/ReubenDo/jSTABL>
6. Shapey, J., Wang, G., **Dorent, R.**, Dimitriadis, A., Li, W., Paddick, I., Kitchen, N., Bisdas, S., Saeed, S., Ourselin, S., Bradford, R., Vercauteren, T. (2021). An artificial intelligence framework for automatic segmentation and volumetry of vestibular schwannomas from contrast-enhanced T1-weighted and high-resolution T2-weighted MRI. *Journal of Neurosurgery JNS*, 134(1), 171-179.

Full-length Peer-reviewed Conference Proceedings

1. **Dorent, R.**, Haouchine, N., Kogl, F., Joutard, S., Juvekar, P., Torio, E., Golby, A., Ourselin, S., Frisken, S., Vercauteren, T., Kapur, T., Wells, W. (2023). Unified Brain MR-Ultrasound Synthesis Using Multi-modal Hierarchical Representations. *Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2023)*. Code: <https://github.com/ReubenDo/MHVAE>.
2. Haouchine, N., **Dorent, R.**, Juvekar P., Torio, E., Wells, W., Kapur, T., Golby, A., Frisken, S. (2023) Learning Expected Appearances for Intraoperative Registration during Neurosurgery. *Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2023)*.
3. Eisenmann, M., Reinke, A., ..., **Dorent, R.**, ..., Maier-Hein, L. (2023). Why is the winner the best? *Conference on Computer Vision and Pattern Recognition (CVPR 2023)*
4. Lebrat, L., Santa Cruz, R, **Dorent, R.**, Urriola Yaksic, J., Pagnozzi, A., Belous, G., Bourgeat, P., Fripp, J., Fookes, C., Salvado, O. (2023). Generalization Properties of Geometric 3D Deep Learning Models for Medical Segmentation. *International Symposium on Biomedical Imaging (ISBI 2023)*
5. Joutard, S., **Dorent, R.**, Vercauteren, T., Modat, M. (2022). Driving Points Prediction for Abdominal Probabilistic Registration. *International Workshop on Machine Learning in Medical Imaging (2022)* (Best paper award)
6. Joutard, S., Pheiffer, T., Audigier, C., Wohlfahrt, P., **Dorent, R.**, Piat, S., ..., Mansi, T. (2022). A multi-organ point cloud registration algorithm for abdominal CT registration. *10th International Workshop on Biomedical Image Registration*.
7. Joutard, S., **Dorent, R.**, Vercauteren, T., Modat, M. (2022). A Pareto front based methodology to better assess medical image registration algorithms. *Medical Imaging 2022: Image Processing (Vol. 12032, pp. 732-735)*. *SPIE Medical Imaging: Image Processing*.
8. **Dorent, R.**, Joutard, S., Shapey, J., Kujawa, A., Modat, M., Ourselin, S., Vercauteren, T. (2021). Inter extreme points geodesics for end-to-end weakly supervised image segmentation. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2021)* Code: <https://github.com/ReubenDo/InExtremIS>. (**Travel Award**)
9. **Dorent, R.**, Joutard, S., Shapey, J., Bisdas, S., Kitchen, N., Bradford, R., ..., Vercauteren, T. (2020). Scribble-based domain adaptation via co-segmentation. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2020)*. Code: <https://github.com/KCL-BMEIS/ScribbleDA>.
10. **Dorent, R.**, Joutard, S., Modat, M., Ourselin, S., Vercauteren, T. (2019). Hetero-modal variational encoder-decoder for joint modality completion and segmentation. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2019)*. Code: <https://github.com/ReubenDo/U-HVED>
11. Joutard, S, **Dorent, R.**, Isaac, A., Ourselin, S., Vercauteren, T., Modat, M. (2019). Permutohedral attention module for efficient non-local neural networks. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2019)*.
12. Wang, G., Shapey, J., Li, W., **Dorent, R.**, Dimitriadis, A., Bisdas, S., ..., Vercauteren, T. (2019). Automatic segmentation of vestibular schwannoma from T2-weighted MRI by deep spatial attention with hardness-weighted loss. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2019)*.
13. **Dorent, R.**, Li, W., Ekanayake, J., Ourselin, S., Vercauteren, T. (2019). Learning joint lesion and tissue segmentation from task-specific hetero-modal datasets. *International Conference on Medical Imaging with Deep Learning (MIDL) (Long Oral Presentation)*

ORGANIZATION OF INTERNATIONAL CONFERENCES

1. CrossMoDA Challenge 2023 - MICCAI, Vancouver (October, 8 2023). Lead organizer.
2. Information Processing in Medical Imaging (IPMI) – Bariloche (June, 18-23 2023). Session chair.
3. Boston Medical Imaging Workshop 2022 – Boston (October, 21 2022). Session chair.

4. CrossMoDA Challenge 2022 - MICCAI, Singapore (September, 17 2022). Lead organizer.

5. CrossMoDA Challenge 2021 - MICCAI, online (September, 27 2021). Lead organizer.

JOURNAL REVIEWING

2020 - Present | Medical Image Analysis

2020 - Present | IEEE Transactions on Medical Imaging

2020 - Present | International Journal of Computer Assisted Radiology and Surgery