Junhao **Wen**

PhD

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My research interests include methodology and application of machine learning, neuroimaging and genetics in brain aging and disorders. Using machine learning, I aim to distill complex, high-dimensional medical data into succinct yet informative dimensional representations that can be translated for personalized medicine. Through my career, I have been a practitioner for open neuroscience.

Education

2015-2019 PhD in Computer Science
Sorbonne University, Paris, France

2012-2015 Master in Electronic Engineering
Beihang University, Beijing, China

2008-2012 Bachelor in Electronic Engineering
Beihang University, Beijing, China

Research Skills

Programming languages	Python, R, Bash, Matlab
Software and frameworks	**Machine learning** (Scikit-learn, TensorFlow, Pytorch), **Neuroimaging** (Nipype, FreeSurfer, FSL, ANTs, SPM), **Genomics** (Plink, PRSice, GCTA, LDSC)
Scientific writing	Microsoft Word, LaTeX, Overleaf, Inkscape
Development tools	PyCharm, RStudio, GitHub
Others	HTML, CSS

Research Experience

August 2019 – August 2021 — **Postdoctoral fellow**
CBICA lab, University of Pennsylvania, USA
- Postdoctoral research working with **Christos Davatzikos**
- Focus on dissecting heterogeneity of brain diseases and data-driven dimensionality reduction techniques

Neuroimaging | Machine learning

October 2015 – June 2019 — **PhD**
ARAMIS lab, Sorbonne University, INRIA, CNRS, INSERM, Paris, France
- Four-year PhD training under the supervision of **Olivier Colliot** and **Anne Bertrand**
- Software developer for Clinica
- PhD dissertation : Structural and microstructural neuroimaging for diagnosis and tracking of neurodegenerative diseases

Neurodegenerative disease | Neuroimaging | Machine learning

July 2017 – October 2017 — **Visiting scholar**
CMIC lab, University College London (UCL), London, UK
- Collaboration with **Daniel Alexander** and **Hui Zhang**
- Collaboration on a NODDI paper : Neurite density is reduced in the presymptomatic phase of C9orf72 disease

FTLD | Clinical study | Neuroimaging

Publications

Papers in Peer reviewed Journals

- Wen, J., Cynthia HY Fu, Duygu Tosun, Yogasudha Veturi, Zhijian Yang, Ahmed Abdulkadir, Elizabeth Mamourian et al., Characterizing Heterogeneity in Neuroimaging, Cognition, Clinical Symptomatology, and Genetics Among Patients With Late-Life Depression. 2022, JAMA Psychiatry, doi:10.1001/jamapsychiatry.2022.0020 link
- Bertrand, A., Wen, J. (Co-first author), Rinaldi, D., Houot, M., Sayah, S., Camuzat, A., Fournier, C., Fontanella, S., Routier, A., Couratier, P. and Pasquier, F., Habert, M., Hannequin, D., Martinaud, O., Caroppo, P., Levy, R., Dubois, B., Brice, A., Durrleman, S. and Colliot, O., Le Ber., I. 2018. Early Cognitive, Structural, and Microstructural Changes in Presymptomatic C9orf72 Carriers Younger Than 40 Years. JAMA Neurology, 75(2), pp.236-245. link
- Wen, J., Thibeau-Sutre, E., Diaz-Melo, M., Samper-González, J., Routier, A., Bottani, S., Dormont, D., Durrleman, S., Burgos, N., Colliot, O. and Alzheimer's Disease Neuroimaging Initiative, 2020. Convolutional neural networks for classification of Alzheimer's disease : Overview and reproducible evaluation. Medical image analysis, 63, p.101694. link
- Yang, Z., Nasrallah, I.M., Shou, H., Wen, J. et al., A deep learning framework identifies dimensional representations of Alzheimer's Disease from brain structure. Nature Communication 12, 7065 (2021). https://doi.org/10.1038/s41467-021-26703-z link
- Wen, J., Zhang, H., Alexander, D.C., Durrleman, S., Routier, A., Rinaldi, D., Houot, M., Couratier, P., Hannequin, D., Pasquier, F. and Zhang, J., Colliot, O., Le Ber., I. and Bertrand, A. 2018. Neurite Density is Reduced in the Presymptomatic Phase of C9orf72 Disease. J Neurol Neurosurg Psychiatry, pp.jnnp-2018. link
- Wen, J., Varol, E., Sotiras, A., Yang, Z., Chand, G.B., Erus, G., Shou, H., Hwang, G. and Davatzikos, C., 2021. Multi-scale semi-supervised clustering of brain images : deriving disease subtypes. Medical image analysis, 63, p.101694. link
- Wen, J., Samper-González, J., Bottani, S., Routier, A., Burgos, N., Jacquemont, T., Fontanella, S., Durrleman, S., Epelbaum, S., Bertrand, A. and Colliot, O., 2021. Reproducible evaluation of diffusion MRI features for automatic classification of patients with Alzheimer's disease. Neuroinformatics, 19(1), pp.57-78. link
- Chand, G. B., Singhal, P., Dwyer, D. B., Wen, J. et al., 2022. Two schizophrenia imaging signatures and their associations with cognition, psychopathology, and genetics in the general population. American Journal of Psychiatry, 2022, , In press
- Lalousis, P., Schmaal, L., Wood, S., Reniers, R., Barnes, N., Chisholm, K., Griffiths, S., Stainton, A., Wen, J., Hwang, G., Davatzikos, C., Bertolino, A., Borgwardt, S., Brambilla, P., Kambeitz, J., Lencer, R., Pantelis, C., Ruhrmann, S., Salokangas, R., Schultze-Lutter, F., Schmidt, A., Meisenzahl, E., Koutsouleris, N., Dwyer, D., Upthegrov, R., Neurobiologically Based Stratification of Recent Onset Depression and Psychosis : Identification of Two Distinct Transdiagnostic Phenotypes. Biological Psychiatry, 2022, In press
- Ansart, M., Epelbaum, S., Bassignana, G., Bône, A., Bottani, S., Cattai, T., Couronne, R., Faouzi, J., Koval, I., Louis, M. and Thibeau-Sutre, E., Wen, J., 2020. Predicting the progression of mild cognitive impairment using machine learning : a systematic, quantitative and critical review. Medical image analysis, p.101848.
- Samper-González, J., Burgos, N., Bottani, S., Fontanella, S., Lu, P., Marcoux, A., Routier, A., Guillon, J., Bacci, M., Wen, J. and Bertrand, A., Bertin, H., Habert, M., Durrleman, S., Evgeniou, T. and Colliot., O. 2018. Reproducible evaluation of classification methods in Alzheimer's disease : framework and application to MRI and PET data. Neuroimage, 2018.
- Yue, L., Hu, D., Zhang, H., Wen, J., Wu, Y., Li, W., Sun, L., Li, X., Wang, J., Li, G. and Wang, T., 2021. Prediction of 7-year's conversion from subjective cognitive decline to mild cognitive impairment. Human brain mapping, 42(1), pp.192-203.
- Marcoux, A., Burgos., Bertrand.,Teichmann., Routier A., Wen J., Samper-Gonzalez J., Bottani, S., Durrleman, S., Habert, M. and Colliot, O. 2018. An Automated Pipeline for the Analysis of PET Data on the Cortical Surface. Frontiers in Neuroinformatics, 2018.
- Routier A, Burgos N, Díaz M, Bacci M, Bottani S, El-Rifai O, Fontanella S, Gori P, Guillon J, Guyot A, Hassanaly R, Jacquemont T, Lu P, Marcoux A, Moreau T, Samper-González J, Teichmann M, Thibeau-Sutre E, Vaillant G, Wen, J., Wild A, Habert M-O, Durrleman S and Colliot O (2021) Clinica : An Open-Source Software Platform for Reproducible Clinical Neuroscience Studies. Front. Neuroinform. 15:689675. doi : 10.3389/fninf.2021.689675

Papers in conference proceedings

- Wen, J., Varol, E., Chand, G., Sotiras, A. and Davatzikos, C., 2020, October. MAGIC : Multi-scale Heterogeneity Analysis and Clustering for Brain Diseases. International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 678-687). Springer, Cham.
- Yang, Z., Wen, J., and Davatzikos, C., 2021. Surreal-GAN:Semi-Supervised Representation Learning via GAN for uncovering heterogeneous disease-related imaging patterns. International Conference on Learning Representations

Book chapters

- Wen, J., Varol, E., Yang, Z., Hwang, G., Dwyer, D., Kazerooni, A., Lalousis, P., and Davatzikos, C., 2022, January. Subtyping brain diseases from imaging data. Machine Learning for Brain Disorders Springer. In press

Papers in preparation

- Wen, J. et al., Mega-analysis of brain structural covariance, genetics, and clinical phenotypes. **Submitted** to Nature. link
- Hwang, G., Wen, J. (Co-first author), et al., Three Neuroanatomical Dimensions of Autism Spectrum Disorder, Revealed via Machine Learning. **In preparation** for Nature Communications
- Abdulkadir et al., iISTAGING : A framework for dimensional analysis of brain structure and function in aging and neurodegeneration. **In preparation** for Nature Methods

Languages

Chinese ●●●●●
French ●●●●○
English ●●●●○
Spanish ●●●○○

Interests

- Music
- Extreme sports
- Travel

References

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