ARISTEIDIS SOTIRAS

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Assistant Professor

Mallinckrodt Institute of Radiology

Washington University in St. Louis

APPOINTMENTS

11/18 –	**Mallinckrodt Institute of Radiology** **Washington University in Saint Louis, Saint Louis, MO** Assistant Professor (tenure-track)
01/16 – 11/18	**Center for Biomedical Image Computing and Analytics** **University of Pennsylvania, Philadelphia, PA** *Research Associate*
02/12 – 01/16	**Center for Biomedical Image Computing and Analytics** **University of Pennsylvania, Philadelphia, PA** *Postdoctoral Research Scholar*. Supervisor: Christos Davatzikos

RESEARCH INTERESTS

Medical imaging	Computer aided diagnosis, computational anatomy, computer vision in biomedical imaging, image registration, image segmentation, multi-atlas segmentation, tumor segmentation
Machine learning	Support vector machines, sparse learning, dictionary learning, non-negative matrix factorization, graphical models, markov random fields
Clinical applications	Brain development, healthy aging, Alzheimer's disease, disease heterogeneity

EDUCATION

2007 – 2011	**École Centrale Paris (ECP), France – Inria Saclay** *Ph.D. in Applied Mathematics,* with the highest distinction and the compliments of the jury for the excellent quality of the work. Discrete Image Registration: a *Hybrid* Paradigm. Supervisor: Nikos Paragios
2006 – 2007	**École Polytechnique – École Normale Supérieure (ENS), Cachan, France** *M.Sc. in Mathematics, Vision and Machine Learning,* with distinction.
2001 – 2006	**National Technical University of Athens, Greece** *Diploma in Electrical and Computer Engineering.*

AWARDS AND HONORS

2018	*MICCAI'18*, **Student Travel Award**
2016	*CBICA-UPenn* **Seed Grant Award** (PI), Jun. 2016-Jun. 2017. Budget=$50,000.
2016	**First rank** in *Multimodal brain tumor segmentation challenge (BRATS)*.
2016	*MICCAI'16*, **Student Travel Award**
2015	*MICCAI'15*, **Student Travel Award**

2015	*IEEE ISBI*, **Best Student Paper Award Finalist**
2015	**Top rank** in *Multimodal brain tumor segmentation challenge (BRATS).*
2014	**Top rank** in *Alzheimer's Disease Big Data DREAM Challenge.*
2010	*IEEE ISBI*, **Best Student Paper Award**
2007 – 2010	**Panagiotis Triantafyllidis Scholarship** awarded by the *Greek Ministry of Education*
2007 – 2008	**Scholarship for Excellence** awarded by *École Polytechnique*

EXECUTIVE SUMMARY

Publications (h-index=15, citations>1800)

- 7 papers in acclaimed journals with high impact factor (impact factor >8).
- 1st author ***Proc. Natl. Acad. Sci.*** paper on brain development (broad scientific and popular **press** interest).
- Landmark survey paper on image registration (**>800** citations; most popular and cited papers in *IEEE Trans. Med. Imaging*)
- Highly cited discrete registration paper in *Annu. Rev. Biomed. Eng.* (**>100** citations).
- Highly cited DRAMMS registration paper in *Med. Image Anal.* (**>200** citations; ScienceDirect 25 Hottest Articles, Medical Image Analysis, 2011; Most Cited Medical Image Analysis Articles by Scopus for 2010-2014, 2011-2015).

Contributions to Science

Image registration and segmentation: pioneered the use of discrete optimization techniques and probabilistic graphical models for efficient image registration.
- Novel **hybrid pairwise registration** coupling landmark and intensity information.
- Novel discrete framework for **groupwise registration** and atlas creation.
- Novel discrete **multi-atlas segmentation** framework that solves the atlas-to-target registrations and label fusion steps simultaneously.
- DRAMMS: discrete **feature-based pairwise registration**.
- DRAMMS registration **software** (**>1000** downloads; used extensively in NIH funded studies).
- Robust **statistical-based registration** for oncologic imaging.

Development of novel machine learning tools for large heterogeneous studies:
- **Non-negative matrix factorization** for interpretable data reduction and biomarker extraction.
- Novel **semi-supervised machine learning** tools for disentangling **heterogeneity** in cross-sectional and longitudinal studies.
- Novel method for **adaptive discriminative smoothing** for multivariate inference.

Multivariate pattern analysis of large neuroimaging studies:
- Novel delineation of **cortical organization** in large neurodevelopmental study (findings published in ***Proc. Natl. Acad. Sci.***).
- Novel **data-driven definition of neuroanatomical subtypes** in Alzheimer's Disease (findings published in *Brain* and *NeuroImage*).

Grant-writing experience

- Intra-mural CBICA **Seed Grant Award (PI):** *Characterization of regional neurodevelopment in adolescence through non-negative pattern analysis*

- NIH multi-PI (PIs: Davatzikos, Sotiras) **R01** Grant submission (NIBIB BMIT-B): *Quantifying the heterogeneity of multi-modal brain imaging patterns using machine learning: towards dimensional neuroimaging of brain diseases*

PUBLICATIONS

Working papers

W1) S. Bakas, G. Shukla, H. Akbari, G. Erus, **A. Sotiras**, M. Rozycki, R. T. Shinohara, & C. Davatzikos, (2017). Survival prediction in glioblastoma patients using integrative analysis of radiomic features: from advanced to basic magnetic resonance imaging acquisition protocols. Under Review.

W2) E. Varol, **A. Sotiras**, R. T. Shinohara & C. Davatzikos, (2018). Generative discriminative machine. In Preparation.

W3) K. Zeng, **A. Sotiras**, & C. Davatzikos, (2018). Active Diffeomorphic Deformation Models for Robust Registration. Under Review.

W4) A. Dong, **A. Sotiras**, E. Varol, J. Doshi, R. T. Shinohara, S. M. Resnick, & C. Davatzikos, (2018). HELIOS: Parsing the Heterogeneity of Longitudinal Imaging through Integrated Clustering and Spatiotemporally Regularized Spline Curve Fitting. Under Revision in IEEE Transactions in Medical Imaging.

W5) A. N. Kaczkurkin[*], S. S. Park[*], **A. Sotiras**, ..., T. D. Satterthwaite, (2018). Fear is Dimensionally Associated with Reduced Thickness in Youth. Under Revision in American Journal of Psychiatry.

W6) J. Chen, …, **A. Sotiras**, C. Davatzikos, S. B. Eickhoff, (2018). A Worldwide Study of Modeling the Psychopathology in Schizophrenia via Machine Learning: From Symptomatology to Neurobiological Endophenotype. In Preparation.

W7) **A. Sotiras**, M. Bilgel, G. Erus, Y. J. Chen, M. Habes, I. Nasrallah, H. Shou, D. A. Wolk, S. M. Resnick & C. Davatzikos, (2018). In Vivo Staging of Regional Amyloid Deposition through Multivariate Pattern Analysis. In Preparation.

W8) C. Davatzikos, A. Sotiras, Y. Fan, M. Habes, G. Erus, S. Rathore, S. Bakas, R. Chitalia, A. Gastounioti & D. Kontos (2018) Precision diagnostics based on machine learning-derived imaging signatures. Under Review

Journals

J1) M. Ouyang, T. Jeon, **A. Sotiras**, Q. Peng, V. Mishra, C. Halovanic, M. Chen, L. Chalak, N. Rollins, T. P.L. Roberts, C. Davatzikos & Hao Huang (2018) Differential cortical microstructural maturation in the preterm human brain with diffusion kurtosis and tensor imaging. *Proceedings of the National Academy of Sciences*, In Press. **(Impact Factor: 9.66)**

J2) M. Habes, **A. Sotiras**, G. Erus, J. B. Toledo, D. Janowitz, D. A. Wolk, H. Shou, N. Bryan, J. Doshi, H. Völzke, U. Schminke, W. Hoffmann, S. M. Resnick, H. J. Grabe, & C. Davatzikos, (2017). Spatial heterogeneity of white matter hyperintensities: links to vascular risk factors, cognition, atrophy and Alzheimer's genetics. *Neurology*, 91(10), e964-e975. **(Impact Factor: 8.32)**

J3) E. Varol, **A. Sotiras**, & C. Davatzikos, (2018). MIDAS: Multivariate inference with discriminative adaptive smoothing. *NeuroImage*, 174, 111-126. **(Impact Factor: 5.84)**

J4) D. P. Varikuti[*], S. Genon[*], **A. Sotiras**, H. Schwender, F. Hoffstaedter, C. Jockwitz, S. Caspers, S. Moebus, K. Amunts, C. Davatzikos, & S. B. Eickhoff, (2018). Evaluation

of non-negative matrix factorization of gray matter in age prediction. *NeuroImage*, 173, 394-410. **(Impact Factor: 5.84)**

J5) R. Nassar[*], A. N. Kaczkurkin[*], C. Xia, **A. Sotiras**, et al., (2018). Gestational Age is Dimensionally Associated with Structural Brain Network Abnormalities in Adolescence. *Cerebral Cortex*. In Press. **(Impact Factor: 6.56)**

J6) M. Pehlivanova, D. H. Wolf, **A. Sotiras**, et al., (2018). Diminished cortical thickness is associated with impulsive choice in adolescence. *Journal of Neuroscience. 38(10),* 2471-2481 **(Impact Factor: 6.34)**

J7) C. Davatzikos, et al., (2018). Cancer Imaging Phenomics Toolkit (CaPTk): Quantitative Imaging Analytics for Precision Diagnostics and Predictive Modeling of Treatment Response. *Journal of Medical Imaging.* 5(1), 011018.

J8) S. Bakas, H. Akbari, **A. Sotiras**, M. Bilello, M. Rozycki, J. S. Kirby, J. B. Freymann, K. Farahani, & C. Davatzikos, (2017). Advancing The Cancer Genome Atlas glioma MRI collections with expert segmentation labels and radiomic features expansion. *Nature Scientific Data*, 4, 170117. **(Impact Factor: 4.84)**

J9) **A. Sotiras**, J. B. Toledo, R. C. Gur, R. E. Gur, T. D. Satterthwaite[*], & C. Davatzikos[*], (2017). Patterns of coordinated cortical remodeling during adolescence: associations with functional specialization and evolutionary expansion. *Proceedings of the National Academy of Sciences*, 114(13), 3527-3532. **(Impact Factor: 9.66)**

J10) E. Varol, **A. Sotiras**, & C. Davatzikos, (2017). HYDRA: Revealing heterogeneity of imaging and genetic patterns through a multiple max-margin discriminative framework. *NeuroImage*, 145, Part B, 346-364. **(Impact Factor: 5.84)**

J11) S. Alchatzidis, **A. Sotiras**, E. I. Zacharaki, & N. Paragios, (2017). A discrete MRF framework for integrated multi-atlas registration and segmentation. *International Journal of Computer Vision*, 121(1), 169-181. **(Impact Factor: 8.22)**

J12) A. Dong[*], J. B. Toledo[*], N. Honnorat, J. Doshi, E. Varol, **A. Sotiras**, D. Wolk, J. Q. Trojanowski, C. Davatzikos, & Alzheimer's Disease Neuroimaging Initiative, (2017). Heterogeneity of neuroanatomical patterns in prodromal Alzheimer's disease: links to cognition, progression and biomarkers. *Brain*, 140(3), 735-747. **(Impact Factor: 10.29)**

J13) G. I. Allen, et al., (2016). Crowdsourced estimation of cognitive decline and resilience in Alzheimer's disease. *Alzheimer's & Dementia*, 12(6), 645-653. **(Impact Factor: 9.48)**

J14) K. Zeng, G. Erus, **A. Sotiras**, R. T. Shinohara, & C. Davatzikos, (2016). Abnormality detection via iterative deformable registration and basis-pursuit decomposition. *IEEE Transactions on Medical Imaging*, 35(6), 1937-1951. **(Impact Factor: 3.94)**

J15) **A. Sotiras**, S. M. Resnick, & C. Davatzikos, (2015). Finding imaging patterns of structural covariance via Non-Negative Matrix Factorization. *NeuroImage*, 108, 1-16. **(Impact Factor: 5.84)**

J16) **A. Sotiras**, C. Davatzikos, & N. Paragios, (2013). Deformable medical image registration: A survey. *IEEE Transactions on Medical Imaging*, 32(7), 1153-1190. **(Impact Factor: 3.94; > 500 citations)**

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[*] Authors contributed equally to this work.

J17) B. Glocker*, **A. Sotiras***, N. Komodakis, & N. Paragios, (2011). Deformable medical image registration: Setting the state of the art with discrete methods. *Annual Review of Biomedical Engineering*, 13, 219-244. **(Impact Factor: 10.51, > 100 citations)**

J18) Y. Ou, **A. Sotiras**, N. Paragios, & C. Davatzikos, (2011). DRAMMS: Deformable registration via attribute matching and mutual-saliency weighting. *Medical Image Analysis*, 15(4), 622-639. **(Impact Factor: 4.19, > 200 citations, > 1000 downloads)**

Peer-reviewed conferences

C1) E. Varol, **A. Sotiras**, K. Zeng & C. Davatzikos, (2018). Generative discriminative models for multivariate inference and statistical mapping in medical imaging. *International Conference on Medical Image Computing and Computer-Assisted Intervention*. 11072, 540-548. **Oral Presentation.**

C2) K. Zeng, **A. Sotiras**, & C. Davatzikos, (2018). Statistically-constrained robust diffeomorphic registration. *IEEE International Symposium on Biomedical Imaging,* 1083-1087. **Oral Presentation.**

C3) E. Varol, **A. Sotiras**, & C. Davatzikos, (2018). Regionally discriminative multivariate statistical mapping. *IEEE International Symposium on Biomedical Imaging,* 1560-1563. **Oral Presentation.**

C4) E. Varol, **A. Sotiras**, & C. Davatzikos, (2016). Structured Outlier Detection in Neuroimaging Studies with Minimal Convex Polytopes. *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 9900, 300-307. **Student travel award. (Acceptance Rate: 30.1%)**

C5) K. Zeng, S. Bakas, **A. Sotiras**, H. Akbari, M. Rozycki, S. Rathore, S. Pati, & C. Davatzikos, (2016). Segmentation of Gliomas in Pre-Operative and Post-Operative Multimodal Magnetic Resonance Imaging Volumes Based on a Hybrid Generative-Discriminative Framework. *International Workshop on Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries*, 10154, 184-194.

C6) E. Varol, **A. Sotiras**, & C. Davatzikos, (2015). Disentangling disease heterogeneity with max-margin multiple hyperplane classifier. *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 9349, 702-709. **Student travel award. (Acceptance Rate: 32.5%)**

C7) A. Gastounioti, **A. Sotiras**, K. S. Nikita & N. Paragios, (2015). Graph-based motion-driven segmentation of the carotid atherosclerotique plaque in 2D ultrasound sequences. *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 9351, 551-559. **(Acceptance Rate: 32.5%)**

C8) V. Fécamp, **A. Sotiras**, & N. Paragios, (2015). Modular linear iconic matching using higher order graphs. *IEEE International Symposium on Biomedical Imaging*, 1097-1101. **Best student paper award finalist.**

C9) S. Alchatzidis, **A. Sotiras**, & N. Paragios, (2015). Local atlas selection for discrete multi-atlas segmentation. *IEEE International Symposium on Biomedical Imaging*, 363-367. **Oral presentation. (Oral Acceptance Rate: 18.2%)**

C10) S. Bakas, K. Zeng, **A. Sotiras**, H. Akbari, M. Rozycki, S. Rathore, S. Pati, & C. Davatzikos, (2015). GLISTRboost: combining multimodal MRI segmentation, registration, and biophysical tumor growth modeling with gradient boosting machines for glioma segmentation. *International Workshop on Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries*, 9556, 144-155.

C11) V. Fécamp, **A. Sotiras**, & N. Paragios, (2015). Simultaneous linear and deformable registration through a higher order MRF model. _Medical Image Computing and Computer-Assisted Intervention Workshop on Bayesian and Graphical Models for Biomedical Imaging_.

C12) S. Alchatzidis, **A. Sotiras**, & N. Paragios, (2014). Discrete multi-atlas segmentation using agreement constraints. _Proceedings of the British Machine Vision Conference_. **Oral presentation. (Oral Acceptance Rate: 7%)**

C13) K. Karantzalos, **A. Sotiras**, & N. Paragios, (2014). Efficient and automated multimodal satellite data registration through MRFs and linear programming. _IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops,_ 335-342.

C14) K. Gkirtzou, J.-F. Deux, G. Bassez, **A. Sotiras**, A. Rahmouni, T. Varacca, N. Paragios, & M. B. Blaschko, (2013). Sparse Classification with MRI Based Markers for Neuromuscular Disease Categorization. _International Workshop on Machine Learning in Medical Imaging,_ 8184, 33-40.

C15) B. Gaonkar, **A. Sotiras**, & C. Davatzikos, (2013). Deriving Statistical Significance Maps for Support Vector Regression Using Medical Imaging Data. _International Workshop on Pattern Recognition in Neuroimaging,_ 13-16.

C16) **A. Sotiras**, & N. Paragios, (2012). Discrete symmetric image registration. _IEEE International Symposium on Biomedical Imaging_, 342-345. **Oral presentation. (Oral Acceptance Rate: 19%)**

C17) S. Alchatzidis, **A. Sotiras**, & N. Paragios, (2011). Efficient parallel message computation for MAP inference. _IEEE International Conference on Computer Vision_, 1379-1386. **(Acceptance Rate: 23.7%)**

C18) **A. Sotiras**, Y. Ou, B. Glocker, C. Davatzikos, & N. Paragios, (2010). Simultaneous geometric-iconic registration. _International Conference on Medical Image Computing and Computer-Assisted Intervention_, 6362, 676-683. **(Acceptance Rate: 32%)**

C19) M. Savinaud, **A. Sotiras**, S. Maitrejean, & N. Paragios, (2010). Bioluminescence enhancement through fusion of optical imaging and cinematic video flow. _IEEE International Symposium on Biomedical Imaging_, 688-691. **Oral presentation. (Oral Acceptance Rate: 15%)**

C20) **A. Sotiras**[*], R. Neji[*], J.-F. Deux, N. Komodakis, G. Fleury, & N. Paragios, (2010). A kernel-based graphical model for diffusion tensor registration. _IEEE International Symposium on Biomedical Imaging_, 524-527. **Oral presentation. Best student paper award. (Oral Acceptance Rate: 15%)**

C21) **A. Sotiras**, N. Komodakis, B. Glocker, J.-F. Deux, & N. Paragios, (2009). Graphical models and deformable diffeomorphic population registration using global and local metrics. _International Conference on Medical Image Computing and Computer-Assisted Intervention_, 5761, 672-679. **(Acceptance Rate: 30%)**

C22) **A. Sotiras**, N. Komodakis, G. Langs, & N. Paragios, (2009). Atlas-based deformable mutual population segmentation. _IEEE International Symposium on Biomedical Imaging_, 5-8.

Abstracts

A1) **A. Sotiras**, M. Bilgel, G. Erus, Y. J. Chen, M. Habes, I. Nasrallah, H. Shou, D. A. Wolk, S. M. Resnick & C. Davatzikos, (2018). In Vivo Staging of Regional Amyloid

Deposition through Multivariate Pattern Analysis. *Pendergrass Symposium (University of Pennsylvania)*. **Oral presentation.**

A2) R. Jirsaraie, S. Rush, A. Kaczkurkin, A. Rosen, **A. Sotiras**, R. Ciric, P. Cook, M. Elliott, D. Roalf, D. Bassett, R. Shinohara, E. Leibenluft, C. Davatzikos, D. Wolf, and T. Satterthwaite, (2018). Accelerated Cortical Thinning Within Structural Brain Networks is Associated With Irritability in Youth, *Biological Psychiatry*, 83(9) S402.

A3) **A. Sotiras**, M. Bilgel, G. Erus, Y. J. Chen, M. Habes, I. Nasrallah, H. Shou, D. A. Wolk, S. M. Resnick, and C. Davatzikos, (2018). Multivariate Pattern Analysis on a Longitudinal Cohort of Cognitively Normal Elderly Reveals Distinct Stages of Regional Amyloid Deposition, *Alzheimer's & Dementia* 14(7), P26-P28. **Oral presentation.**

A4) M. Habes, G. Erus, **A. Sotiras**, J. Doshi, Y. Fan, I. Nasrallah, D. A. Wolk, and C. Davatzikos, (2018). Imaging Signatures of AD, Brain Aging and White Matter Hyperintensities Show Dissociable Associations with Cognitive Decline in Healthy Subjects Longitudinally Followed in ADNI, *Alzheimer's & Dementia*, 14(7), P856-P857.

A5) G. Erus, **A. Sotiras**, M. Habes, J. Doshi, and C. Davatzikos, (2018). CSF-CAT: A Composite Csf Aβ and Tau Index Toward Radio-Pathomics of Alzheimer's Disease, *Alzheimer's & Dementia*, 14(7), P836-P838.

A6) Ji Chen, et al., (2018). Modeling the Psychopathology in Schizophrenia via Machine Learning: A Worldwide Multi-Center Study. *Organization for Human Brain Mapping (OHBM)*.

A7) S. Genon[*], D. P. Varikuti[*], **A. Sotiras**, H. Schwender, F. Hoffstaedter, K. Patil, C. Jockwitz, S. Caspers, S. Moebus , K. Amunts, C. Davatzikos, & S. B. Eickhoff, (2018). Localized compression of grey matter maps for age prediction in healthy & clinical populations. *Organization for Human Brain Mapping (OHBM)*.

A8) A. N. Kaczkurkin, R. Nassar, C. Xia, **A. Sotiras**, M. Pehlivanova, T. M. Moore, A. Garcia de La Garza, D. R. Roalf, A. Rosen, S. A. Lorch, K. Ruparel, R. T. Shinohara, C. Davatzikos, R. C. Gur, R. E. Gur, and T. D. Satterthwaite, (2018). Premature Birth is Associated with Structural Brain Network Abnormalities Across Development, . *Organization for Human Brain Mapping (OHBM)*.

A9) Y. Chen, **A. Sotiras**, I. Nasrallah, R. Akhtar, J. Rick, A. Chen-Plotkin, J. Trojanowski, D. Weintraub, C. Davatzikos, and J. Dubroff, (2018). Non-negative matrix factorization evaluation of patterns of brain Aβ deposition in Parkinson's disease, Alzheimer's disease and normal controls on [18F]florbetapir PET, *Journal Nuclear Medicine*, 59(Supp 1) 484.

A10) E. B. Baller, A. N. Kaczkurkin, **A. Sotiras**, E. Varol, T. M. Moore, C. H. Xia, M. E. Calkins, R. E. Gur, R. C. Gur, D. H. Wolf, D. S. Bassett, C. Davatzikos, and T. D. Satterthwaite, (2018). Semi-supervised machine learning reveals 3 patterns of cognitive impairment in depressed youth. *American College of Neuropsychopharmacology*.

A11) A. Kaczkurkin, R. Nassar, C. Xia, **A. Sotiras**, M. Pehlivanova, T. M. Moore, A. Garcia de La Garza, D. R. Roalf, A. Rosen, S. Lorch, K. Ruparel, R. T. Shinohara, C. Davatzikos, R. C. Gur, R. E. Gur, and T. D. Satterthwaite, (2017). A Dimensional Measure of Prematurity is Associated With Structural Brain Network Abnormalities in Children, Adolescents, and Young Adults, *Neuropsychopharmacology*, 43, S304-S305

A12) G. Shukla, S. Bakas, S. Rathore, H. Akbari, **A. Sotiras**, & C. Davatzikos, (2017).

Radiomic Features from Multi-Institutional Glioblastoma MRI Offer Additive Prognostic Value to Clinical and Genomic Markers: Focus on TCGA-GBM Collection. *International Journal of Radiation Oncology• Biology• Physics*, 99(2), E107-E108.

A13) S. Bakas, G. Shukla, H. Akbari, **A. Sotiras**, G. Erus, M. Rozycki, G. S. Alexander, J. Lombardo, R. T. Shinohara & Christos Davatzikos, (2017). Accurate and generalizable pre-operative prognostic stratification of gioblastoma patients using integrative quantitative radiomic analysis of conventional MRI. *Neuro-Oncology*, 19(Suppl_6), vi151.

A14) **A. Sotiras**, J. B. Toledo, R. C. Gur, R. E. Gur, T. D. Satterthwaite, & C. Davatzikos, (2017). Coordinated cortical remodeling: connections to functional specialization and evolutionary expansion. *Organization for Human Brain Mapping (OHBM)*.

A15) E. Varol, **A. Sotiras**, & C. Davatzikos, (2017). Brain mapping through regional multivariate pattern analysis and discriminative adaptive smoothing. *Organization for Human Brain Mapping (OHBM)*.

A16) D. P. Varikuti, **A. Sotiras**, S. Genon, H. Schwender, F. Hoffstaedter, C. Jockwitz, S. Caspers, S. Moebus, K. Amunts, C. Davatzikos, & S. B. Eickhoff, (2017). Evaluation of non-negative matrix factorization of gray matter in age prediction. *Organization for Human Brain Mapping (OHBM)*. **Oral presentation.**

A17) T. Jeon, **A. Sotiras**, M. Ouyang, M. Chen, L. Chalak, C. Davatzikos, & H. Huang, (2016). Spatiotemporal dynamics and patterns of cortical mean kyrtosis and fractional anisotropy in the preterm brains. *International Society for Magnetic Resonance in Medicine (ISMRM)*.

A18) **A. Sotiras**, S. M. Resnick, & C. Davatzikos, (2015). Multivariate spatial patterns of amyloid deposition revealed through non-negative matrix factorization. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 11(7), Supplement, P553-554.

A19) **A. Sotiras**, T. D. Satterthwaite, R. C. Gur, R. E. Gur, & C. Davatzikos, (2015). Mapping Developmental Topography of Brain Morphology through Non-Negative Matrix Factorization. *Organization for Human Brain Mapping (OHBM)*.

A20) **A. Sotiras**, R. C. Gur, R. E. Gur, T. D. Satterthwaite, & C. Davatzikos, (2014). Extracting Spatial Patterns of Cortical Thickness Covariance via Non-Negative Matrix Factorization. *Organization for Human Brain Mapping (OHBM)*.

Technical reports

T1) **A. Sotiras**, C. Davatzikos, & N. Paragios, (2012). Deformable medical image registration: a survey. *INRIA Research Report*, RR-7919.

T2) **A. Sotiras**, N. Komodakis, & N. Paragios, (2009). MRF-based diffeomorphic population deformable registration & segmentation. *INRIA Research Report*, RR-6837.

T3) **A. Sotiras**, R. Neji, J.-F. Deux, N. Komodakis, M. Maatouk, A. Rahmouni, G. Bassez, G. Fleury, & N. Paragios, (2009). Diffusion tensor registration using probability kernels and discrete optimization. *INRIA Research Report*, RR-6943.

Book chapters

B1) **A. Sotiras**, B. Gaonkar, H. Eavani, N. Honnorat, E. Varol, A. Dong, & C. Davatzikos, (2016). Machine Learning as a Means Toward Precision Diagnostics and Prognostics. *Machine Learning and Medical Imaging*.

B2) **A. Sotiras**, Y. Ou, N. Paragios, & C. Davatzikos, (2015). Graph-based deformable registration. *Handbook of Biomedical Imaging; Methodologies and Clinical Research*.

Patents	P1) S. Alchatzidis, **A. Sotiras**, & N. Paragios, (2014). Method and device for efficient parallel message computation for map inference. US Patent 8890862.

INVITED TALKS

Oct. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Emory University
Jun. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics* Washington University in St. Louis
May 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Connecticut
Apr. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Stony Brook University
Apr. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Illinois at Chicago
Apr. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Texas at Arlington
Apr. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Drexel University
Mar. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Tulane University
Mar. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Johns Hopkins University
Mar. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Michigan State University
Mar. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Pittsburgh
Mar. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* Georgia State University
Feb. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Maryland, Baltimore County
Feb. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Michigan
Jan. 2018	*Advancing Big Neuroimaging Data Analysis for Precision Diagnostics.* University of Pennsylvania
Dec. 2016	*Challenges in big data analysis in neuroimaging*. Rutgers University.
Jun. 2015	*Harmonizing sMRI data via robust preprocessing*. NIMH-sponsored Organization for Human Brain Mapping (OHBM) satellite meeting: "Harmonize This: Analyzing Diverse Neuroimaging Datasets".
Jul. 2013	*Deformable registration: deformations, similarity metrics, & optimization*. Biomedical imaging summer school. Institut Henri Poincaré.
Oct. 2012	*Registration, rigid and non-rigid*. International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) tutorial: "From Minimally Invasive Image-Guided Interventions To Non-Invasive Ultrasound based Interventions".
Feb. 2012	*Discrete Hybrid Image Registration*. Imperial College London.
Jan. 2012	*Discrete Hybrid Image Registration*. NeuroSpin.

TEACHING EXPERIENCE

Guest lecturer	Statistical methods for neuroimaging, (2017). Prof. R. T. Shinohara, University of Pennsylvania.
	Biomedical image analysis, (2015, 2017). Prof. P. Yushkevich, University of Pennsylvania.
Teaching assistant	Signal processing, (2010). Prof. I. Kokkinos, École Centrale Paris.
	Computer vision, (2009). Prof. I. Kokkinos, École Centrale Paris.
Research supervision	Supervision of the Ph.D. work of Erdem Varol and Ke Zeng (with Prof. C. Davatzikos, University of Pennsylvania). Supervision of the Ph.D. work of Stavros Alchatzidis and Vivien Fécamp (with Prof. N. Paragios, École Centrale Paris).

PROFFESIONAL ACTIVITIES

Co-organizer	2018 Medical Image Computing and Computer-Assisted Intervention Workshop: *GRAIL: Graphs in Biomedical Image Analysis.*
	2017 Medical Image Computing and Computer-Assisted Intervention Workshop: *GRAIL: Graphs in Biomedical Image Analysis.*
	2015 International Symposium on Biomedical Imaging special session: *Current Challenges and Methodological Advances in Biomedical Image Registration*.
Journal Reviewer	Trends in Neurosciences, Neuroimage, Neurobiology of Aging, Neuroimage: Clinical, IEEE Transactions on Medical Imaging, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Journal of Biomedical and Health Informatics, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Knowledge and Data Engineering, Computer Vision and Image Understanding, International Journal of Computer Vision, Pattern Recognition, Pattern Recognition Letters, SPIE Journal of Medical Imaging, Psychological Medicine, International Journal of Computer Assisted Radiology and Surgery, Computer Methods and Programs in Biomedicine
Conference Reviewer	Medical Image Computing and Computer Assisted Intervention, IEEE International Symposium on Biomedical Imaging, Computer Vision and Pattern Recognition, British Machine Vision Conference, International Conference on Computer Vision, European Conference on Computer Vision, Asian Conference on Computer Vision, Neural Information Processing Systems, International Conference on Machine Learning, Organization for Human Brain Mapping
Funding Body Reviewer	National Institute of Standards and Technology, US-Israel Binational Industrial Research and Development (BIRD) Foundation
Program committee	2015 Medical Image Computing and Computer-Assisted Intervention Workshop: Bayesian and graphical models for biomedical imaging.
Ph.D. committee	Dr. Vivien Fécamp (École CentraleSupélec, N. Paragios), 12 Jan. 2016.