CURRICULUM VITAE

AMY ISABELLA SENTIS

BIOGRAPHICAL

OFFICE ADDRESS: 436D Baker Hall
Carnegie Mellon University
Pittsburgh, PA 15213

BIRTH PLACE: Sydney, NSW, Australia

CITIZENSHIP: United States of America & Australia

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EDUCATION AND TRAINING

GRADUATE:

University of Pittsburgh & Carnegie Mellon University, Medical Scientist Training Program, Pittsburgh, PA
- MD – University of Pittsburgh School of Medicine, 2025 (expected)
- PhD – Program in Neural Computation, Carnegie Mellon University, 2023 (expected

UNDERGRADUATE:

Stanford University, Stanford, CA
- BS in Computer Science with Honors (Biocomputation Track), 2010 – 2014

University of New South Wales School of Medicine, Sydney, NSW, Australia
- Enrolled in six-year program leading to MD, Feb – May 2010
- Withdrew to enroll at Stanford University

RESEARCH EXPERIENCE

Center for the Neural Basis of Cognition, Carnegie Mellon University, Pittsburgh, PA
Graduate Rotation Student – Verstynen CoAxLab. Full-time Summer 2018
- Implement a prediction stacking algorithm relying on linear support vector regression and random forests to develop a biomarker for cardiovascular disease (CVD) risk from multimodal neuroimaging data sets
- Develop synthetic data to conduct parameter recovery and power analysis testing for alternative sampling resolutions
- Run model to predict measures of CVD risk, specifically mean intima media (blood vessel) thickness, plaque index and metabolic syndrome, which are proven, conventional markers of CVD risk

Center for Neuroscience, University of Pittsburgh, Pittsburgh, PA
Graduate Rotation Student – Ross Lab, Pittsburgh Center for Pain Research. Full-time Summer 2017
- Design experiments to characterize the lateral parabrachial (brain stem region) response to pain, including reviewing literature and conducting pilot experiments
- Perform laboratory techniques including dissecting and fixing neural tissue, immunohistochemistry and confocal microscopy
- Quantify neuronal activity and evaluate the degree of lateralization / somatotopy by implementing parametric and non-parametric analyses of spatial distributions of neuronal activation

Systems Neuroscience and Pain Lab, Stanford University School of Medicine, Stanford, CA
Clinical Research Coordinator. Full-time Jul 2015 – May 2017
- Compare machine learning and GLM analyses of real-time fMRI neurofeedback data from studies evaluating alternative therapies for Chronic Low Back Pain
- Develop participant visit protocols, data collection tools
- Train team members in participant training and neuroimaging procedures
- Design, program, evaluate and implement tools for data collection, analysis and participant tracking
- Conduct fMRI scans on participants

Assistant Clinical Research Coordinator. Full-time Jul 2014 – Jul 2015
- Conduct machine learning analyses of fMRI data from studies comparing alternative therapies for Chronic Low Back Pain
- Train participants to modulate endogenous pain using attention and cognitive regulation techniques
- Assist in conducting fMRI scans on participants
- Assist in developing participant protocols

Undergraduate Research Assistant. Full-time Summer 2013, part-time Sep 2013 – Jun 2014
- Use Support Vector Machine analyses of real-time fMRI data to classify brain states during cognitive modulation of pain
- Identify methods of preprocessing fMRI data that improve classification of brain states
- Shadow fMRI scans on study participants

Laboratory of Behavioral and Cognitive Neurology, Stanford University School of Medicine, Stanford, CA
Undergraduate Research Assistant. Full-time Summer 2012, part-time Sep 2012 – Mar 2013
- Conduct analyses of intracranial EEG data to predict onset of epileptic seizures
- Use FFT methods to search for early warning signals predicting seizure activity in next 24 hours

National Center for Biomedical Ontology, Stanford University, Stanford, CA
Undergraduate Research Assistant. Part-time Sep 2011 – Jun 2012
- Develop ontology for mortality rates using death certificate data for World Health Organization
- Identify appropriate vocabularies, encode datasets for NCBO submission to Metadata Challenge

Commonwealth Bank of Australia, Portfolio Value Optimisation Department, Sydney, NSW, Australia
Client Analytics Analyst. Full-time Summer 2011
- Conduct client analyses on massive datasets including database extractions and metadata analyses using SAS and SQL
- Identify and report patterns of consumer behavior of strategic interest to specific bank clients

Thomas R. Wenkart, M.D., Sydney, NSW, Australia
Undergraduate Research Assistant. Part-time Summer 2011
- Evaluate miniaturized medical laboratories for plenary address on "Point of Care Testing in Primary Care" at the Royal Australian College of General Practitioners Conference for General Practice

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MANUSCRIPTS AND PAPERS

Weber II, K.A., **Sentis, A.I.,** Berndel-Huey, O.N., Chen, Y., Wang, X., Parrish, T.B., Mackey, S. (2018) *Thermal stimulation alters cervical spinal cord functional connectivity in humans.* Neuroscience 369:40-50.

Sentis, A.I., Mackey, S., Brown, J. *Pain and neuroimaging: a spatially quantitative metaanalysis.* Manuscript in preparation.

Sentis, A.I. (2014, June) *Discriminating brain activation patterns for cognitive and sensory aspects of pain processing.* Honors thesis for Department of Computer Science, Stanford University.
    Winner of Ben Wegbreit Prize for Best Undergraduate Computer Science Honors Thesis

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CONFERENCE ABSTRACTS

Sentis, A.I., Kua, C.H., Gianaros, P.J., Verstynen, T. (2018, August) *Predicting Biomarkers of Cardiovascular Health from Multimodal Neuroimaging Data.* University of Pittsburgh and Carnegie Melon University Medical Scientist Training Program Retreat, Pittsburgh, PA.

Sentis, A.I., Chiang, M., Ross, S. (2017, August) *Connecting the dots in pain pathways: characterizing the parabrachial response to pain**. University of Pittsburgh and Carnegie Melon University Medical Scientist Training Program Retreat, Pittsburgh, PA.

Sentis, A.I., Law, C., Adedeji, A., Goldin, P., Gross, J., Mackey, S. (2017, June) *Differentiating brain activation between sensitization and maintenance of pain.* Annual Meeting of the Organization for Human Brain Mapping, Vancouver, BC, Canada

Weber II, K.A., **Sentis, A.I.**, Chen, Y., Wang, X., Parrish, T.B., Mackey, S. (2017, June) *Laterality of spinal cord segmental functional connectivity: A resting state spinal cord fMRI study.* Annual Meeting of the Organization for Human Brain Mapping, Vancouver, BC, Canada

Law, C., Adedeji, A., **Sentis, A.I.**, Chen, J., Glover, G., Gross, J., Goldin, P., Mackey, S. (2017, June) *Using Parametric Analysis of fMRI to differentiate cognitive modulation strategies for pain.* Annual Meeting of the Organization for Human Brain Mapping, Vancouver, BC, Canada

Sentis, A.I., Weber II, K.A., Johnson, K.A., Mackey, S. (2017, May) *Pain processing during recalled pain differs in chronic low back pain sufferers and healthy individuals.* American Pain Society Annual Scientific Meeting, Pittsburgh, PA.

Weber II, K.A., **Sentis, A.I.**, Johnson, K.A., Martucci, K.T., Mackey, S. (2017, May) *Neural correlates of response inhibition in chronic low back pain.* American Pain Society Annual Scientific Meeting, Pittsburgh, PA.

Adedeji, A., Law, C., **Sentis, A.I.**, Chen, J., Glover, G., Mackey, S. (2017, May) *Cognitive modulation strategies in chronic low back pain patients through parametric fMRI analysis.* American Pain Society Annual Scientific Meeting, Pittsburgh, PA.

Sentis, A.I., Law, C., Martucci, K., Bagarinao, E., Mackey, S. (2016, September) *Discriminating brain activation patterns for cognitive and sensory pain processing using GLM and SVM.* International Association for the Study of Pain World Congress Meeting, Yokohama, Japan

Law, C., **Sentis, A.I.,** Mackey, S. (2016, September) *Realtime functional magnetic resonance imaging neurofeedback for pain regulation.* International Association for the Study of Pain World Congress Meeting, Yokohama, Japan

Sentis, A.I., Law, C., Sturgeon, J.A., Mackey, S. (2016, June) *Neural correlates of pain catastrophizing in pain-related maladaptive belief induction.* Annual Meeting of Organization for Human Brain Mapping, Geneva, Switzerland

Law, C., **Sentis A.I.**, Mackey, S. (2016, June) *Neural dynamics in cognitive reappraisal of pain.* Annual Meeting of Organization for Human Brain Mapping, Geneva, Switzerland

Sentis, A.I., Law, C., Bagarinao, E., Johnson, K.A., Mackey, S. (2015, June) *Developing real-time fMRI neurofeedback for pain: ROIs for attention regulation.* Annual Meeting of the Organization for Human Brain Mapping, Honolulu, HI.

Sentis, A.I., Law, C., Sturgeon, J.A., Mackey, S. (2016, May) *Pain catastrophizing correlates with neural activation in a maladaptive pain belief induction.* American Pain Society Annual Scientific Meeting, Austin, TX.

Sentis, A.I., Law, C., Johnson, K.A., Bagarinao, E., Mackey, S. (2015, May) *Discrete region and distributed network analysis of attention and cognitive modulation of pain.* American Pain Society Annual Scientific Meeting, Palm Springs, CA.

Law, C., Johnson, K.A., **Sentis, A.I.**, Bagarinao, E., Mackey, S. (2015, May). *Elucidating brain regions engaged in strategies for real-time fMRI neurofeedback pain modulation.* American Pain Society Annual Scientific Meeting, Palm Springs, CA.

Sentis, A.I., Bagarinao, E., Martucci, K., Mackey, S. (2014, May) *Cognitive modulation of pain before and after real-time fMRI neurofeedback training: Improving brain state classification.* American Pain Society Annual Scientific Meeting, Tampa, FL.

Sentis, A.I., Bagarinao, E., Mackey, S. (2013, August) *Improving brain state classification during cognitive modulation of pain before and after real-time fMRI neurofeedback training.* Stanford Bio-X Undergraduate Research Conference, Stanford, CA.

AWARDS AND GRANTS

Best MSTP Workshop Award. University of Pittsburgh, Carnegie Mellon University MSTP, 2019

Real-time fMRI Neurofeedback for Pain Modulation. $10,225. Grant from Richard M. Lucas Center for Imaging at Stanford University, 2017. **Sentis, A.I. (PI),** Law, C., Mackey, S., Glover, G.

Unraveling the Central Mechanisms of Electroacupuncture Versus Placebo Using fMRI. $10,800. Grant from Richard M. Lucas Center for Imaging at Stanford University, 2017. Kong, J. (PI), Law, C., **Sentis, A.I.,** Mackey, S., Manber, R., Glover, G.

Young Investigator Travel Grant. $750. American Pain Society, 2016

Ben Wegbreit Prize for Best Undergraduate Computer Science Honors Thesis. $1,000. Stanford University, 2014

Undergraduate Research Travel Grant. $1,500. Stanford University, 2014

Bio-X Undergraduate Summer Research Program Grant. $7,500. Stanford University, 2013

Second Place Award. $10,000. Healthdata.gov Metadata Developer Challenge, 2012. The National Center for Biomedical Ontology Stanford University, Noy, N. (PI), Nyulas, C., Salvadores, M., **Sentis, A.I.**, Musen, M.

VOLUNTEERING AND SERVICE

MSTP Interviewing Committee, Pittsburgh, PA. Aug 2019 – present
- *Student Interviewer* responsible for interviewing and evaluating prospective University of Pittsburgh, Carnegie Mellon University MSTP students

Women in Science and Medicine, Pittsburgh, PA. Sep 2018 – present
- *MSTP Liaison* responsible for organizing community events and facilitating forums to support women in medicine and science in their professional development, from the student level through to the faculty level

Women's Clinic, Pittsburgh, PA. Sep 2018 – Jun 2019
- *Medical Student Volunteer* responsible for patient intake, interviews and presentations to attending physicians

Arbor Free Clinic, Menlo Park, CA. Mar 2013 – May 2016
- *Patient Navigator Coordinator* responsible for managing patient flow, clinic operation and coordinating patient navigators during clinic, streamlining clinic processes to improve patient care: fortnightly Jul 2015 – May 2016
- *Patient Navigator* responsible for patient intake, patient advocacy with physicians and medical staff and patient follow-up: monthly Apr 2014 – Jun 2015
- *HIV Counselor* responsible for patient intake, counsel for all patients in HIV education and awareness, patient risk assessment: monthly Mar 2013 – Mar 2014

Kairos House Co-op, Stanford University. Sep 2013 – Jun 2014
- *Resident Assistant:* Co-op house staff member responsible for well-being of residents and for managing other house staff members

Stanford Swingtime Dance Troupe. Sep 2011 – Jun 2014
- *Vice-President* responsible for logistics of dance rehearsals / performances: Sep 2013 – Jun 2014
- *Chairperson* responsible for managing activities / retreats: Sep 2012 – Jun 2013
- *Chairperson* responsible for managing performance requests: Jan 2013 – Jun 2013

Stanford Dance Marathon Philanthropic Organization. Feb 2011 – Feb 2013
- *Executive Committee* member responsible for Event Education: Apr 2012 – Feb 2013
- *Media / Public Relations Manager* responsible for raising profile of Dance Marathon: Apr 2011 – Feb 2012

PROFESSIONAL MEMBERSHIP AND TECHNICAL SKILLS

American Pain Society:	2013 – present
Organization for Human Brain Mapping:	2015 – present
International Association for the Study of Pain:	2016 – present
American Medical Association:	2017 – present
Programming Languages:	Python, Java, C, C++

Analytical Packages:	MATLAB, SAS, SPSS, R, SQL, SPM, FSL, ART, ArtRepair, Protege, PyMol, BLAST, GIMP, REDCap, ImageJ
Laboratory Equipment:	MRI, Confocal microscope, Infrared spectrometer
Certifications:	CPR, HIPAA, CITI