# **Eshin Jolly**

Dartmouth College
Dept of Psychological and Brain Sciences
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## Currently Postdoctoral Fellow 2020-Present Consortium for Interacting Minds

Consortium for Interacting Minds Center for Cognitive Neuroscience Dartmouth College (Hanover, NH)

Mentors: Luke Chang, Thalia Wheatley, Emily Finn, Jeremy Manning

## Education & Training

## PhD, Cognitive Neuroscience

2012-2019

NSF Graduate Fellow

Dartmouth College (Hanover, NH)

Thesis: Social Cognitive Maps: A Relational Account of Person Representation and

Memory

Committee: Luke Chang, Thalia Wheatley, Jeremy Manning, Janice Chen

## BA, Brain and Cognitive Science; Psychology

2006-2010

Minor: Music & Jazz Performance
University of Rochester (Rochester, NY)

Thesis: Testing Domain Specificity: Conceptual Knowledge of Living and Non-living

Things

Committee: Jessica Cantlon, Brad Mahon, Elissa Newport

### Microsoft Research PhD Intern 2016

MSR Computational Social Science Group (NYC, NY)

Pls: <u>Duncan Watts</u> & <u>Sid Suri</u>

## Lab Manager 2010-2012

Harvard University (Cambridge, MA)

PI: Jason Mitchell

#### Research Assistant 2008-2010

Baruch College (NYC, NY)

PI: Jennifer Mangels

#### Research Assistant

Mt Hope Family Center, University of Rochester (Rochester, NY)

Pls: Sheree Toth & Jack Peltz

## Industry Consulting

### Senior UX/UI Engineer & Designer

2023-Present

MoreMore Al

Film & media arts startup

## Co-Founder & CTO; Scientific Advisor

2020-Present

Parsnip.ai

Food and ed-tech startup

Scientific Advisor 2020

The Sukhi Project

Employee well-being and mental health startup

## Project Manager; Technical Support Lead

2019-Present Code for America (Upper Valley Brigade)

Rural Internet Project

#### **Funding** Postdoctoral Fellow

2019-Present

National Science Foundation, Career Award 1848370 (\$886,457, PI: Luke Chang) Neural and computational basis of guilt in decision-making (co-written)

**Graduate Fellow** 2013-2016

National Science Foundation, Graduate Research Fellowship (\$90,000) Uncovering the represention of self: A multivariate approach

## Manuscripts In Prep

Jolly, E., Chang, L.J. (in prep). Neural encoding and reinstatement of social motifs.

Jolly, E., Ranger, M.S. & Chang, L.J. (in prep). The neural basis of guilt diffusion in interpersonal harm-minimization.

Jolly, E., Smith A., Gangadharan, A.A., Hoidal, A.S. & Chang, L.J. (in prep). Guiltaversion motivates harm-minimization in surrogate decision-making.

## Under review/revision

Jolly, E., Sadhukha, S., Iqbal, M., Molani, Z., Walsh, T.M., Manning, J.R., & Chang, L.J. (under review). People are represented and remembered through their relationships with others. [psyarxiv preprint]

#### **Published**

Gao, X., Jolly, E., Yu, H., Liu, H., Zhou, X., & Chang, L.J. (in press). The psychological, 2023 computational, and neural foundations of indebtedness. Nature Communications. [bioRxiv preprint]

Jolly, E.\*, Cheong, J.H.\*, Xie, T.\*, Byrne, S. Kenny, M., & Chang, L.J. (2023). Py-Feat: Python Facial Expression Analysis Toolbox. Affective Science. [Link] [toolbox] \*Equal contribution

Jolly, E., Farrens, M., Greenstein, N., Eisenbarth, H., Reddan, M.C., Andrew, E., Wager, 2022 T.D., & Chang, L.J. (2022). Recovering individual emotional states from sparse ratings using collaborative filtering. Affective Science. [Link] [toolbox] [data & materials]

Jolly, E. & Chang, L.J. (2021). Multivariate spatial feature selection in fMRI. Social 2021 Cognitive and Affective Neuroscience, 16(8), 795-806. [Link]

Jolly, E. & Chang, L.J. (2021). Gossip drives vicarious learning and facilitates social connections. Current Biology, 31, 1-11. [Link] [data & materials] Coverage: New York Times, VPR News, PNAS Journal Club

Chang, L.J., Jolly, E., Cheong, J.H., Rapuano, K., Greenstein, N., Chen, P.A., & Manning, J.R. (2021). Endogenous variation in ventromedial prefrontal cortex state **Jolly, E.\***, Sadhukha, S.\*, & Chang, L.J. (2020). Response to Lynch et al: On measuring head motion and effects of head molds during fMRI. *NeuroImage*, 117484. [Link] [data & materials]

2020

2019

**Jolly, E.\***, Sadhukha, S.\*, & Chang, L.J. (2020). Custom-molded headcases have limited efficacy in reducing head motion during naturalistic fMRI experiments. *NeuroImage*, 117207. [Link] [data & materials] \*Equal contribution

Chen, P.H.A., **Jolly, E.**, Cheong, J.H., & Chang, L.J. (2020). Intersubject representational similarity analysis reveals individual variations in affective experience when watching erotic movies. *NeuroImage*, 116851. [PDF] [data & materials]

Chen, P.H.A., Cheong, J.H., **Jolly, E.**, Elhence, H., Wager, T.D., & Chang, L.J. (2019). Socially transmitted placebo effects. *Nature Human Behavior*, *3*, 1295-1305. [PDF] [data & materials]

**Jolly, E.\***, Tamir, D.I.\*, Burum, B.A., & Mitchell, J.P. (2019). Wanting without enjoying: The social value of sharing experiences. *PLoS One*, *14*(4), e0215318. [PDF] [data & materials] \*Equal contribution

**Jolly, E.**, & Chang, L.J. (2019). The Flatland Fallacy: Moving Beyond Low Dimensional Thinking. *Topics in Cognitive Science*, 1-22. [PDF] [figure & simulation code]

**Jolly, E.** (2018). Pymer4: Connecting R and Python for linear mixed modeling. *Journal* of Open Source Software, 3(31), 862. [PDF] [documentation site]

Chang, L. J. & **Jolly E.** (2018). Emotions as computational signals of goal error. In A. Fox, R. Lapate, A. Shackman & R. Davidson (Eds), *The Nature of Emotion* (343-351). Oxford University Press. [PDF]

Cheong, J.C., **Jolly, E.**, Sul, S., & Chang, L.J. (2017). Computational Models in Social and Affective Neuroscience in Moustafa, A. (Eds), *Computational Models of Brain and Behavior* (229-245). Hoboken, NJ: Wiley. [<u>Link</u>]

Rane, S.\*, **Jolly, E.**\*, Park, A.\*, Jang, H\*., & Craddock, R.C. (2017). Developing predictive biomarkers using whole-brain classifiers: Application to the ABIDE I dataset. *Research Ideas and Outcomes*, 3:e12733. [PDF].
\*Equal contribution

Moran, J.M., **Jolly, E.**, & Mitchell, J.P. (2014). Spontaneous mentalizing predicts the 2011–2016 fundamental attribution error. *Journal of Cognitive Neuroscience*, *26*(3), 569-576. [PDF]

Moran, J.M., **Jolly, E.**, & Mitchell, J.P. (2012). Social-cognitive deficits in normal aging. *Journal of Neuroscience*, *32*(16), 5553-5561. [PDF]

**Jolly, E.** (2011). Testing domain specificity: Conceptual knowledge of living and non-living things. *The Yale Review of Undergraduate Research in Psychology, 2,* 94-118. [PDF]

## Open Scientific Software

Invited Talks & Presentations

Py-feat 2022-Present Analysis of facial expressions from images and videos, (Core Developer) [Documentation] [Slides] [Github] downloads 34k **Neighbors** 2020-Present Predicting affective responses from sparse measurement data, (Project Author) [Documentation] [Github] downloads 10k **SvelteTurk** Graphical User Interface for managing experiments on Mturk, (Project Author) [Documentation] [Github] 2017-Present Pymer4 Statistics library for estimating linear mixed-effects models, (Project Author) [Documentation] [Github] downloads 115k **NItools** 2016-Present Toolbox for intuitively analyzing neuroimaging data, (Core Developer) [Documentation] [Video Talk] [Github] downloads 160k Representing and remembering people through their relationships. 2023 Invited talk at the MIND Summer School, Dartmouth College (Hanover, NH) The structure of social memory: People as contexts. Presentation at the Social and Affective Neuroscience Society conference (Santa Barbara, CA) Navigating the social world: A relational account of how we represent, remember, and talk about people. Invited talk at Stanford University (Stanford, CA) People as contexts: A relational account of person representation and memory. Invited talk for Innovators in Cognitive Neuroscience (virtual). [Video] Spontaneous Neural Representations of Social Relationships in Naturalistic Contexts. 2022 Symposium presentation at the International Society for Research on Emotion, USC (Los Angeles, CA) Emotion and Social Perception in Naturalistic Contexts: Perspectives from Affective Computing and Affective Neuroscience. Symposium organizer at the International Society for Research on Emotion, USC (Los Angeles, CA) Methodological considerations in social and affective neuroscience. 2021 Invited talk at NYU Freeman Lab (NYC, NY) Social Cognitive Maps: A Relational Account of Person Representation and Memory. 2020

Invited talk at Harvard University (Cambridge, MA)

Why Design Abstractions Matters for Analytics Tools: Neuroimaging analysis with Neuro-Learn. [Video] Symposium presentation at the Scientific Computing with Python conference (virtual) Spontaneous Neural Representations of Social Relationships in Naturalistic Contexts. Symposium presentation at the Society for Affective Science conference (San Francisco, CA; cancelled due to COVID-19). Methodological challenges in contemporary fMRI studies. Invited talk at the Neuroimaging Analysis Methods meeting, Princeton University (Princeton, NJ) Introduction to functional alignment methods for fMRI. 2018 Invited lecture at the Sao Paulo School of Advanced Science on Social and Affective Neuroscience (Sao Paulo, Brazil) Naturalistic approaches towards an understanding of social reasoning and 2017 communication. Invited talk at Stanford University (Stanford, CA) The social benefits of gossip Presentation at the New England Research on Decision-Making conference, Brown University (Providence, RI) Introduction to Git and Github for psychologists. Invited talk at the Reproducible Psychological Science workshop at the Annual Meeting for the Association for Psychological Science (Boston, MA) Interpersonal dynamics and the inelasticity of social guilt. Invited talk at the Boston Area Moral Cognition Group (Boston, MA) Interpersonal dynamics and the inelasticity of social guilt. Invited talk at Affectiva Inc (Boston, MA) Spontaneous impression-formation about parasocial relationships. Presentation at the Social and Affective Neuroscience Society conference (Los Angeles, CA)

State of the Data: Annual Dartmouth Brain Imaging Center Quality Assurance Report. Presentation at Dartmouth College (Hanover, NH)

2016

2023

Field experiments on human prosociality using Mechanical Turk.

Presentation at Microsoft Research (New York City, NY)

The Social Benefits of Gossip.

Presentation at the Social Brain Sciences Brown Bag (Dartmouth College, NH)

Posters & Conference Proceedings

**Jolly, E.**, Sadhukha, S., Iqbal, M., Molani, Z., Walsh, T.M., Manning, J.R., & Chang, L.J. (2023). The structure of social memory: People as contexts.

Poster at the Social and Affective Neuroscience Society conference (Santa Barbara, CA)

Kwon, D., **Jolly, E.**, Chang, L.J., & Shim, W.M. (2023). Neural representations of dynamic social interactions.

Poster at the 26th Annual Meeting of the Korean Society for Brain and Neural Sciences (Busan, Korea)

T.D., & Chang, L.J. (2022). Recovering individual emotional states from sparse ratings using collaborative filtering.  Poster at the Society for Affective Science conference (virtual)	2022
Jolly, E. & Chang, L.J. (2021). Spontaneous Neural Representations of Social Relationships in Naturalistic Contexts.  Poster at the Social and Affective Neuroscience Society conference (virtual)  Winner Poster Award	2021
Jolly, E. (2020). Pymer4: Bringing R's Powerful Mixed-modeling to Python.  Poster at the Scientific Computing with Python conference (virtual)  Winner Scipy Scholarship	2020
<b>Jolly, E.</b> & Chang, L.J. (2019). Gossip drives vicarious learning and facilitates robust social connections.  Poster at the Social and Affective Neuroscience Society conference (Miami, FL)	2019
Cheong, J.C., Chen, P.A., <b>Jolly, E.</b> , Elhence, H., Wager, T.D., & Chang, L.J. (2019). Socially transmitted placebo effects.  Poster at the Society for Affective Science conference (Boston, MA)	
Jolly, E., Reddan, M.C., Gianaros, P.J., Manuck, S.M. Chang, L.J., & Wager, T.D. (2018).  NeuroLIME: A novel tool for explaining the predictions of complex brain models.  Poster at the Social and Affective Neuroscience Society conference (New York, NY)	2018
Reddan, M.C., <b>Jolly, E.</b> , & Wager, T.D. (2018). NeuroLIME: A novel tool for explaining the predictions of nonlinear neuroimaging classifiers.  Poster at the Organization for Human Brain Mapping conference (Singapore, Singapore)	
Reddan, M.C., <b>Jolly, E.</b> , & Wager, T.D. (2018). NeuroLIME: A novel tool for explaining the predictions of nonlinear neuroimaging classifiers.  Poster at the Computational and Systems Neuroscience conference (Denver, CO)	
<b>Jolly, E.</b> & Chang, L.J. (2017). Gossip drives vicarious learning and facilitates robust social connections.  Poster at the Annual Meeting of the Association for Psychological Science (Boston, MA)	2017
Cheong, J.H., <b>Jolly, E.</b> , & Chang, L.J. (2017). A window into the mind: A computational approach to measuring emotions in response to naturalistic stimuli.  Poster the Social and Affective Neuroscience Society conference (Los Angeles, CA)	
Jolly, E. & Chang, L.J. (2016). Groups, gossip and social dilemmas.  Poster at the International Conference on Computational Social Science (Evanston, IL)	2016
<b>Jolly, E.</b> , Tamir, D.I., & Mitchell, J.P. (2015). The social value of sharing experiences. Poster at the Social and Affective Neuroscience Society conference (Boston, MA) <b>Winner Poster Award</b>	2015
Moran, J.M., <b>Jolly, E.</b> , & Mitchell, J.P. (2012). Spontaneous mentalizing supports the fundamental attribution error.  Poster at the Cognitive Neuroscience Society conference (Chicago, IL)	2012
Peltz, J.S. Toth, S.L., Rogosch, F.A., <b>Jolly, E.</b> , & Cicchetti, D. (2010). Paternal emotional availability's effects on children's socioemotional functioning in maternal depression contexts.  Poster at the Annual Meeting of the Association for Psychological Science (Boston, MA)	2010

Teaching	Methods in Neuroscience at Dartmouth Summer School Invited Faculty Dartmouth College (Hanover, NH) [Resources]	2023
	Introduction to facial expression analysis with py-feat Tutorial at the Consortium for Interacting Minds Dartmouth College (Hanover, NH) [Slides]	
	Introduction to version control for neuroscientists Lecturer and TA at MIND Summer School Dartmouth College (Hanover, NH) [Resources] [Video]	2019
	Introduction to version control for neuroscientists Lecturer and TA at MIND Summer School Dartmouth College (Hanover, NH) [Resources] [Video]	2018
	Computational tools for neuroscience: Jupyter notebooks Lecturer and TA at MIND Summer School Dartmouth College (Hanover, NH) [Resources] [Video]	
	Functional Alignment Techniques in fMRI Lecture at Sao Paulo Summer School on Social and Affective Neuroscience (SPSAN) Mackenzie Presbyterian University (Sao Paulo, Brazil)	
	Computational tools for neuroscience: Jupyter notebooks Lecturer and TA at MIND Summer School Dartmouth College (Hanover, NH) [Resources] [Video]	2017
	Introduction to containers for reproducible research Lecturer and TA at MIND Summer School Dartmouth College (Hanover NH) [Resources]	
	Introduction to Git and Gitub for social psychologists Lecture at the Reproducible Psychological Science workshop Annual Meeting for the Association for Psychological Science (Boston, MA)	
	Introduction to jupyter notebooks (and why you should love them!) Tutorial at BrainHack Local Dartmouth College (Hanover, NH)	
	Online research methods for the experimental study of social behavior Research Methods, Guest Lecturer Dartmouth College (Hanover, NH)	
	Online research methods for the experimental study of social behavior Research Methods, Guest Lecturer Dartmouth College (Hanover, NH)	2016
	The social benefits of gossip Social Psychology, Guest Lecturer Dartmouth College (Hanover, NH)	
	Contemporary fMRI pre-processing: Introduction to Nipype and Docker fMRI Methods, Guest Lecturer  Dartmouth College (Hanover, NH)	
	fMRI Methods: Brain Mapping with functional MRI	2015

Course TA and Guest Lecturer

## Dartmouth College (Hanover, NH)

	Research Methods: Laboratory in Psychological Science* Course TA and Guest Lecturer *Mentored award winning undergraduate group Dartmouth College (Hanover, NH)	
	Introductory Statistics: Experimental Design and Methodology Course TA and Guest Lecturer Dartmouth College (Hanover, NH)	2014
	Research Methods: Laboratory in Psychological Science Course TA and Guest Lecturer Dartmouth College (Hanover, NH)	2013
	Introduction to MATLAB for Behavioral Research Workshop organizer Harvard University (Cambridge, MA)	2011
	Mind Perception Workshop organizer Harvard University (Cambridge, MA)	
Awards	ICN Talk Award Innovators in Cognitive Neuroscience	2023
	Trainee Data Blitz Award Social and Affective Neuroscience Society	
	Complex Systems Summer School (CSSS) Santa Fe Institute	2022
	Mistletoe Research Fellowship finalist  Dartmouth College	2021
	SciPy Scholarship Award Scientific Computing with Python Conference	2020
	Poster Award Social and Affective Neuroscience Society	
	Kavli Summer Institute in Cognitive Neuroscience UC Santa Barbara	2019
	Thayer Consulting Case Competition 1st Place Thayer School of Engineering, Dartmouth College	
	Hack Dartmouth Finalist  Dartmouth College	
	Hack Dartmouth Best Community Hack  Dartmouth College	2018
	Sao Paulo Summer School on Social and Affective Neuroscience (SPSAN)  Mackenzie Presbyterian University, Sao Paulo	
	Graduate Arts and Science Travel Award  Dartmouth College	

	Dartmouth College	
	Neukom Institute Travel Award Dartmouth College	
	Graduate Alumni Research Award  Dartmouth College	2017
	PBS Graduate Travel Award  Dartmouth College	
	Methods in Neuroscience Computational Summer School  Dartmouth College	
	Summer School in Social Neuroscience and Neuroeconomics  Duke University	
	Trainee Data Blitz Award Social and Affective Neuroscience Society	
	Human Neuroimaging Methods Travel Award Organization for Human Brain Mapping	
	Hack Dartmouth 2nd Place project award  Dartmouth College, Thayer School of Engineering	2016
	Neurohackweek Summer School University of Washington eScience Institute	
	Social Affective Neuroscience Society Poster Award Social and Affective Neuroscience Society	2015
	PBS Graduate Travel Award  Dartmouth College	
	National Science Foundation Graduate Research Fellowship  Dartmouth College	2013-2016
	BCS Dept: Highest Honors in research University of Rochester	2010
	Wilder-Trustee Scholarship University of Rochester	2006-2010
Mentorship	Wasita Mahaphanit Graduate Student Dartmouth College	2022-Present
	Sushmita Sadhukha Graduate Student Dartmouth College	
	Maxwell Ranger '22 Honors Thesis Dartmouth College	2021-2022
	Maryam Iqbal '21 Presidential Scholar/Honors Thesis Dartmouth College	2017-2021

PBS Graduate Travel Award

Honors Thesis  Dartmouth College	2020 2021
Max Farrens '20 Full-time Research Assistant Dartmouth College	2019-2020
Nathan P. Greenstein '19 Presidential Scholar Dartmouth College	2017-2019
Sushmita Sadhukha '18 Full-time Research Assistant Dartmouth College	
Arati A. Gangadharan '18 Honors Thesis Dartmouth College	2015-2018
Hirsh Elhence '17 Presidential Scholar Dartmouth College	2015-2017

2020-2021

## **Technical Skills**

### **Programming Languages**

Liza Begunova '21

Python, Javascript, Matlab, R, Bash

## Frontend Web Development

HTML, CSS, Svelte, Vue

## Backend/Fullstack/App Development

Node, Express, Meteor, Mongodb, Firebase, Flask, Electron

#### **Stimulus Presentation**

Psychopy, Psychophysics toolbox, E-prime, Presentation

## **Data Analysis**

Scientific-Python, Statsmodels, Scikit-learn, Lme4

#### **Neuroimaging Analysis**

FSL, AFNI, SPM, Nipype, Nilearn

### **Data Visualization**

Seaborn/Matplotlib, D3, Dash/Plotly, ggplot

#### Dev Ops

Git/Github, TravisCI, Tox, Pytest, Moab-Torque

## Professional Activities

## Reviewer

Cerebral Cortex, Neuroimage, Human Brain Mapping, SCAN, Neuropsychologia, Cognition and Emotion, JESP, PLoS One, GigaScience, JOSS, Nature Communications, SIGCHI, Frontiers in Psych, JPSP, JEP:G, Journal of Neuroscience, Scientific Reports

## **Society Memberships**

Social and Affective Neuroscience Society, Society for Affective Science, Organization for Human Brain Mapping, Cognitive Neuroscience Society, Society for Personality and Social Psychology

# Leadership & Community

Committee Member Inclusivity, Diversity, and Culture Advisory Committee Dartmouth College, Hanover, NH	2019-2022
Board Member  Dartmouth College Postdoctoral Association  Dartmouth College, Hanover NH	2020-2021
VP of Client Outreach <u>Dartmouth Graduate Consulting Group</u> Dartmouth College, Hanover, NH	2018-2020
Co-Founder Line@ Project Dartmouth College, Hanover, NH	2017-2020
Organizing committee member  Dartmouth Brainhack, Hanover, NH	2017
Station Leader GWISE Science day for local middle schools Dartmouth College, Hanover, NH	2014
Primary Organizer Social Brain Sciences Symposium talk series Dartmouth College, Hanover, NH	2013-2015

## **Graduate Representative**

Social Area Graduate Student Representative Dartmouth College, Hanover, NH

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Last updated: August 2023