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San Diego, CA

# William P. McCarthy

PhD Candidate in  
Cognitive Science

I use tools from computational  
cognitive science to study how  
people learn to make things.

## SKILLS

### Programming

Python  
Javascript (node, jsPsych)  
R  
HTML/ CSS  
MATLAB  
Java

### Data

Data analysis  
(pandas, numpy, dplyr)  
Data visualization  
(matplotlib, seaborn, ggplot)  
Statistics

### Scientific workflows

Psychological experiment design  
Full-stack web experiment development  
Project management  
Scientific writing  
Crowdsourcing

### Creative

Adobe CC  
Graphic design

## OTHER

- Tutored A-level (age 16-18) students in Mathematics, Physics, and Computer Science
- Freelance programming projects: HR Survey deployment system (Django), proof of concept iOS app (Swift)
- Commissioning artist (painting)

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## EDUCATION

2018 - 2024

### PhD in Cognitive Science

University of California San Diego

2013 - 2017

### Master of Computer Science and Philosophy

University of Oxford

2013 - 2016

### Bachelor of Arts in Computer Science and Philosophy

University of Oxford

## EXPERIENCE

2019 - 2022

### Graduate Student Researcher

Cognitive Tools Lab, UC San Diego

- Led **numerous scientific studies** investigating what people learn as they build things, and participated in multi-university collaborations (Princeton, MIT) using linguistic data to probe human abstraction learning
- Created and maintained a **full stack framework** for running web experiments (mongoDB, node.js, jsPsych), and a novel **task interface** for studying block construction online (p5.js)
- Tested hypotheses about learning and communication by designing behavioral experiments and creating computational cognitive models (Bayesian, program synthesis)
- Performed quantitative analysis of human behavioral and linguistic data, including the development of novel metrics and visualization techniques for sequential data
- Presented findings at international conferences

2019 - 2022

### Teaching Assistant

Cognitive Science Department, UC San Diego

- Helped teach 12+ courses, including: Intro to Data Science; Data Science in Practice; Intro to Python; Intro to Computation; Cyborgs Now and in the Future;
- Led weekly discussion sections for up to 60 students; guest lectured for 300+ students

Jun 2017 - Dec 2017

### Research Assistant

Human Information Processing Lab, University of Oxford

- Statistical analysis and computational modeling of human decision making
- Collection of behavioral and EEG data

Jun 2014 - Sept 2014

### Pre-Sales Intern

Datastax

- Created demos of fault tolerant, high-volume data storage using Apache Spark and NoSQL Cassandra Databases
- Provisioned and networked virtual machines across multiple servers

## SELECTED PUBLICATIONS

2022 - conference poster

### Identifying concept libraries from language about object structure

44th Annual Meeting of the Cognitive Science Society

2021 - conference talk

### Learning to communicate about shared procedural abstractions

43rd Annual Meeting of the Cognitive Science Society

2020 - conference talk

### Learning to build physical structures over time

42nd Annual Meeting of the Cognitive Science Society