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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

### Data

Data wrangling

(pandas, numpy, dplyr)

Data visualization

(matplotlib, seaborn, ggplot)

Statistics

(linear mixed effects, ANOVA, regression, t-test, chi-squared, signal detection)

Databases (SQL, NoSQL, mongo)

### Programming

Python

Javascript

R

HTML/ CSS

MATLAB

Java

Pytorch

### Research

Experiment design

Full-stack experiment development

Research project management

Scientific writing

Crowdsourcing

Computational modeling

### 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 navigation app

wpmccarthy.com

 wpmccarthy

 WP McCarthy

 wpmccarthy

## EDUCATION

2018 - June 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 - 2023

**Graduate Student Researcher**

*Cognitive Tools Lab, UC San Diego*

- Coordinated interdisciplinary research in multi-university research teams (Princeton, MIT) to lead numerous **scientific research projects** from ideation to publication.
- Implemented computational models (Bayesian, program synthesis) to understand how collaborators refine their **communication about design procedures**.
- Fine-tuned large language models for visual/ programmatic representations and engineered prompts to expose limitations of visual reasoning capabilities.
- Designed novel metrics and visualizations to demonstrate fine-grained changes in **how people build things**.
- Developed and maintained a **full stack framework** for running web experiments and several **task interfaces** for recording generative behaviors (building, drawing, writing).
- Presented results at international conferences and in highschool classrooms.

2019 - 2023

**Teaching Assistant**

*Cognitive Science Department, UC San Diego*

- Taught in 12+ courses, including: Intro to Data Science; Data Science in Practice; Intro to Python; Intro to Computation; Cyborgs Now and in the Future.
- Taught data science concepts to undergraduates in weekly discussion sections.

Jun 2017 - Dec 2017

**Research Assistant**

*Human Information Processing Lab, University of Oxford, UK*

- Performed statistical analysis and computational modeling of human decision making.
- Collected in-person behavioral and EEG data.

Jun 2014 - Sept 2014

**Pre-Sales Intern**

*Datastax, London, UK*

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

## SELECTED PROJECTS / PUBLICATIONS

2022 - conference poster

*44th Annual Meeting of the Cognitive Science Society*

**Identifying concept libraries from language about object structure**

- Built web experiment platform and analyzed linguistic data to model concept learning.

2021 - conference talk

*43rd Annual Meeting of the Cognitive Science Society*

**Learning to communicate about shared procedural abstractions**

- Constructed computational model of language change during human collaboration.

2020 - conference talk

*42nd Annual Meeting of the Cognitive Science Society*

**Learning to build physical structures over time**

- Built web experiments and statistical models to measure skill learning.