

# Amogh Sinha

Vancouver, Canada | [amoghsinha1121@gmail.com](mailto:amoghsinha1121@gmail.com)

[www.amoghsinha.net](http://www.amoghsinha.net)

## EDUCATION

**University of British Columbia**

**Vancouver, Canada**

*BSc in Cognitive Systems, Cognition and Brain (Interdisciplinary: Comp Sci., Psych, Phil and Linguistics)*

## SKILLS & INTERESTS

**Language:** JAVA | Python | R | C# | C++

**Tools:** MATLAB | SPSS | Qualtrics | MS Office (Word, Excel, PowerPoint) | VS Code | Figma

**Certification:** TCPS2 | Python | SQL Server

**Soft skills:** Strong Communication | Quick adaptability | Creative thinking | New Idea generation and product development | Perseverance | Collaboration.

**Interests:** AI in cognitive Sciences | Research and development in Brain computer interfaces | Applications of Machine learning and AI in cognitive Sciences | Data analysis | Phil of mind | Consciousness studies

## RELEVANT EXPERIENCE

**Research Assistant Internship | BC Children's Hospital - (CNOS Lab)** Nov 2023 – Aug 2024 | Vancouver, Canada

**Recipient of Work Learn International Undergraduate Research Award.**

**Project:** Working on Functional Network Chapters

- **As an author, led a team** to develop the “Primary Auditory functional Cognitive Mode” chapter and also assisted with the “Maintaining Internal Attention Cognitive Mode” chapter.
- **Performed C-PCA** using lab based software. Then classified the networks using **MATLAB**. Then proceeded to perform **mixed ANOVA using SPSS syntax**, on the data received from **fMRI CPCA** data which helped **create HDR plots on Excel**.
- Generated reports which analytically **correlated HDR activity to task performance**, to explain the function of the network.

**Research Volunteer | UBC (Brain Dynamics Lab)**

Jan 2024 – July 2024 | Vancouver, Canada

**Project:** Using Transcranial Alternating Current Stimulation (**tACS**) to check Alpha wave difference and behavioral difference after brain stimulation.

- Wrote **MATLAB code to analyze and present data**.
- **Conducted >10 experiments** that utilized **EEG and tACS, following set guidelines which included questionnaires, briefing and debriefing to participants**.
- Managed database of **>200 patient demographics** in **SPSS**.
- **Aided in creating experimental design** after conducting a literature review and comparing different oculomotor task paradigms for the experiment.

**Research Volunteer | BC Children's Hospital - (Cognitive Neurosci. Of Schizophrenia Lab)**

Oct 2023 – Nov 2023 | Vancouver, Canada

**Project:** Generate Base To Peak (BTP) report

- Utilizing CPCA results conducted on fmri data, operating **SPSS to generate data** that shows the interactions between each condition and group in a study.
- **Generating Estimated HDR vs Time plot**, using Excel to convert the derived data into an which is then included in a report.
- Producing SPSS syntax to derive beta weights for the desired time bins on the graph.

**Research Analyst | JW Marriott Aerocity New Delhi**

June 2023 – Sept 2023 | New Delhi, India

- **Project:** Understanding each department process and exploring implementation of new technology.
- **Collaborated with each department head** and understood the day to day process.
- **Compiled and proposed a list of AI technological additions and implementations** which could increase efficiency and improve experience of both - guests and employees.

**UX Research Intern | Kontech insights**

Aug 2022 – Nov 22 | Vancouver, Canada

- **Project:** International SMEs that succeeded and failed after entering China | Ranking Translation-apps
- **Contrasted** the “collective unconscious” of the western societies against Chinese society; explaining the different methodologies companies utilized to overcome such differences.
- Discerned company backgrounds to **formulate a socio-economic perspective on their growth/failure**.
- In another project, **formulated a thorough research plan (linguistic algorithms)** to compare and evaluate different translation applications.

### Authorship

- [\(Preprint\)](#) *"Cognitive Mode Detectable with Task-Based fMRI: Auditory Perception (AUD)"*.
- (Preprint) *"The Role Of EM Fields In Influencing/Inducing Cognition"*. Conducted a lit. review in the relevant field and wrote a paper which supported a theory called Conscious ElectroMagnetic Information (CEMI) field theory.
- (Proposal) *"Training Artificial Neural Network Models to Recognize Emotional Schema and Predict Personality Type"*.
- (Article) *"Where do the top-down and bottom-up processes of the mind meet?"*

**Literature Review:** *"The Effects Of The Psychoactive Compound Psilocybin On Cognition"*.

### **Experimental Design (ED) Formulation and Qualitative & Quantitative Analysis (QA):**

- (ED) *"Effects of an induced stressor on working memory"*
- (ED) *"Different types of learners using VARK (Visual, Auditory, Reading, and Kinesthetic) methods"*.
- (QA & ED) Wrote Likert scale questions for a survey (Project-5; pg 2.)
- (QA) Conducted interviews.

## PROJECTS

---

### 1. **Position prediction model | JAVA, AI application**

- Developed a Partially Observable Markov Decision Process algorithm to predict the position of a robot in a grid. Created accurate observation and transition models that were used in the algorithm.

### 2. **Bank Customer retention analytics | Python, reinforcement learning**

- **Prediction model** on the likelihood of a customer leaving the bank. Developed a **DNN using kerasAPI, tensorflow, and numpy** libraries in Python, training the DNN model on a given data set and calculating the probability based on multiple selected factors.

### 3. **Bill-splitting app | JAVA, JSON**

- Created an algorithm to allocate and split item prices by their respective users and their proportionate share. Implemented via **JSON** with capability to store, retrieve, and edit saved files (bill and user info). (File I/O, OOP, polymorphism)

### 4. **Website prototype dev. and analysis | Figma**

- Independently developed UBC CS building room-booking website prototype (lo-fi to med-fi) on Figma | **Conducted and analyzed user studies**; Designed and created user flow using concise user personas and stories.

### 5. **Case studies | Craigslist**

- Followed **AGILE methodology** as a group to complete the project.
  - Personally **conducted observational study** (using think out loud method), **developed survey questions** (likert-scale question formulation) on Qualtrics, and also devised analysis strategy
-