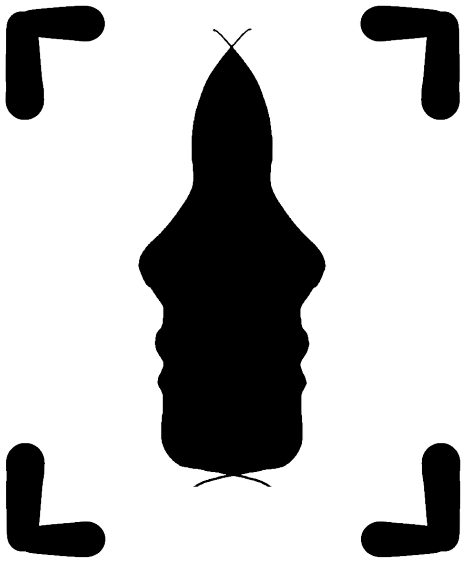
Project Charter

Mobile Apps to Reduce Cross-Race Recognition Deficit

University of Colorado **Boulder**

Department of Psychology and Neuroscience



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Revision History (Last Revised November 10th, 2020)

Change Description	Approved by	Date of Revision

Approval: _____

Introduction

1.1 Background, University of Colorado Boulder:

Mission: To shape tomorrow's leaders, be the top University for innovation, and to positively impact humanity.

Vision: To be a leader in addressing the humanitarian, social, and technological challenges of the twenty-first century.

Student Values:

- Act with honor, integrity, and accountability in my interactions with students, faculty, staff, and neighbors.
- Respect the rights of others and accept our differences.
- Contribute to the greater good of this community.

These values are reinforced by our Inclusive Excellence Initiative. CU Boulder's identity is defined by respect for diversity and inclusivity.

1.2 Background, Department of Psychology and Neuroscience

The Department of Psychology and Neuroscience is composed of Faculty, Staff, Research Assistants, Graduate Students, and Undergraduate Students. Through teaching, learning, research, and community outreach, we seek to promote scholarship at the intersection of psychology and neuroscience. Driving this mission is a deep, shared commitment to improving the human condition for all people.

The complete statement: https://www.colorado.edu/psych-neuro/departmental-mission

Project Summary

2.1 Problem History

In 2017, the New York State Court of Appeals in the United States issued a decision that jurors be educated about the unreliable nature of eyewitness testimony in all cases involving cross-race eyewitnesses. Research surrounding cross-race facial recognition suggests that although we are accurate at identifying faces within our own racial group, it can be much more difficult to identify the faces of those in different racial groups. This deficit between the accuracy of identifying faces within our own racial group in comparison to those in other racial groups is referred to as the cross-race deficit (or CRD).

2.2 Objectives

This project aims to build on last year's work to help publish two mobile apps that help reduce and study CRD. We know that training can work to reduce this deficit. This project aims to be another helpful training assist for users in reducing their own CRD. This app would use various exercises to train users in individuating faces of other races and measure progress over time.

In addition to training end-users' cross-race facial recognition. This project is intended to aid researchers in the CU Psychology Department with making sense of racial bias, and how processes are influenced by race through data collection within the app.

2.3 Benefit and Impact

Data generated from this app can be used by the CU Boulder Psychology Department to further research on reducing the effect of the CRD.

There is really no current way for a user to practice individuating faces of other races and therefore reduce their CRD. The created apps can service such a need. Given the potential progression research and racial advancements, these apps provide this project is work doing.

Objective and Scope

3.1 Business Objectives

Publish two mobile apps that provide the following exercises:

- Matching name and face
- "Memory"
- Who's new
- Shuffle

In addition, before and after training the following tasks will be used to evaluate and analyze the participant's performance.

- "Forced choice" is a daily assessment. It's done at the beginning, before a participant starts training with faces of a given race, and again at the end of the training. (If a participant wanted to train with Black faces, and again with Asian faces, the beginning and end assessments would be repeated for that race session.)

3.2 High-Level Requirements (In-Scope)

- A mobile app to train users and reduce their CRD. The tasks are bundled into lessons to increase user engagement.

- Researcher portal: User progress is recorded and made available to the CU Boulder Psychology Department for review in a research setting.
- A method to store the data gained from app-usage on a server in the Psychology department.
- Expand the racial and gender groups to include Black, White, Asian, and male and female faces.

3.3 Project Scope

In Scope:

- An iPhone and Android app that includes the aforementioned tasks, bundled into short lessons of progressing difficulties. These lessons will contain hand-curated faces, as opposed to randomly selected ones. Each lesson should be short enough for the user to complete in a sitting (5-10 minutes).
- Dynamic Difficulty: present users with different facial sets based on performance, this is done manually.
- The gamification of each of the tasks, so as to maximize user engagement.
- Application software maintenance and support.

Out of Scope:

- Task difficulty is increased dynamically through machine learning algorithms.
- Easy updating procedure for future use by the CU Psychology department.
- Game mode to compete with other users.
- Dynamically facial generation.
- Any products beyond those mentioned above.

Project Approach

4.1 General Approach – Solution Delivery Process

Learn how the previous team built their app and get a handle on the codebase. Each project component will be built upon/developed and implemented separately. After the needed components are developed, they will be integrated into the overall app. Documentation will be created during development. Preferred implementation for each application feature will be developed and implemented after approval from our Project Sponsor.

4.2 Assumptions and Constraints

- The current codebase is well developed and easily expandable.

- Once a preferred implementation is identified, both the project team and project sponsor will maintain full support for the implementation plan unless changes are explicitly discussed.

4.3 Project Risks and Issues

- The potential for a section of the existing codebase needing to be updated or rebuilt.
- Continuous communication between the project team and project sponsor will be required to ensure that expectations and implementations match, and that any ambiguities that arise during development can be resolved with mutual understanding.
- During this project, as issues arise that put the success of the project at risk, the issues and risks will be documented in the weekly status reports and tracked through resolution.

4.4 Risk Mitigation and Change Control

- Any changes to the scope will require a discussion between the project team, project sponsor, and project mentor, and will require the approval of all parties to be accepted. These decisions will be made based on their impacts to the schedule and resources required.
- Changes to scope will be recorded in the project charter as well as in the weekly status report.

Project Plan

5.1 Key Deliverables

A GitHub repository that contains but is not limited to:

- Project documents including but not limited to
    1. Project Charter
    2. Work Breakdown Structure
    3. Functional/Non-Functional Requirements
    4. Project Plan – GANTT chart
    5. Project Architecture Plan
    6. Formal Project Status Report
    7. Project Risk Mitigation Plan
    8. Detailed Design Specifications
- The source code to two tested and working mobile applications.
- The source code to any other component related to the project.
- Administrative documents such as meeting logs, attendance, time sheets, and weekly reports.
- Any credentials needed for the operation of the project.

- Any resources used for this project.
- A document detailing how to use, maintain, and update the applications, codebase, and face base.

5.2 Major Milestones

The following table outlines the project milestones and projected deliverable dates. Please note that these dates are approximations due to the fact that we are dealing with an existing codebase. We do not know if we will need to rebuild or update features or how long these changes would take. As we make progress these dates will become clearer.

Deliverable	Deliverable Date
Prototype	Mid-October
Database Designing	Mid-November
Interface Designing/Changing	Mid-January
Database Building - Extending Racial Face Sets	Mid-January
Forced Choice Training	End of February
Research Portal	Mid-March
Dynamic Difficulty	Mid-April
Release to App Store/Google Play	End of April

5.3 Key Stakeholder Roles & Responsibilities

Stakeholder	Role/Responsibility	Contact
Alan Paradise	Instructor	Alan.Paradise@Colorado.edu
Joshua Correll	Project Owner	Joshua.Correll@colorado.edu
Chelsea Chandler	Teaching Assistant	Chelsea.Chandler@colorado.edu
Madison Rivas	Front-End Developer	Madison.Rivas@Colorado.edu
Liyang Ru	Back-End Lead Developer	Liyang.Ru@Colorado.edu
Alvaro Santillan	Mobile-App Lead Developer	Alvaro.Santillan@Colorado.edu
Guangshi Xu	ML Lead Developer	Guxu4949@Colorado.edu

Siyu Yao	Front-End Lead Developer	Siya7259@Colorado.edu

5.4 Time and Cost Estimates

Costs
- Labor Costs $0.00
- Team Cost $0.00

Project Hours
- Team meeting 1-2 hours per week.
- Sponsor meeting 1-2 hours every two weeks.
- Software development 8 hours per team member per week.

Hardware/Software Costs
- Apple Store License $0.00
- Google Store License $0.00

5.5 Acceptance Criteria

- Two mobile apps that expand to allow for multiple genders and racial groups.
- The two apps implement/Improve the “Forced choice” task daily assessment.
- The tests and exercises dynamically sample different sets of faces during the training.
- A stable iOS app published to the App Store.
- A stable Android app published to the Google Store.

Project Sponsor Approval: Joshua Correll (typed as my signature)