1 Introduction

Context/Need/Gap/Hero Funnel. sample citation: [**matthis˙retinal˙2022**]

Our current institutions of education and scientific research are inequitable, exclusionary by design, and ill-equipped to address the existential threats and transformative opportunities presented by the rise and spread of high technology through a globally interconnected world.

The current system is a built around a massive concentration of resources within Ivory-tower institutions, with research occuring in siloed 'cottage industries' driven by student labor and debt within a gerontocratic ponzi-scheme competition based heirarchy predicated on the assumption of lateral competition predicated on assumptions of false scarcity.

To face the rising challenges and seize the opportunities, we must develop new institutional structures based on a commitment to the values of *Universal Access* and *Universal Design*.

In this proposal, we present a potential model of an Open Source Ecosystem (OSE) as a prototype organization structured in service of these needs.

Specifically, we describpe a plan to buttress and shape the burdgeoning community of users, developers, students, and educators forming around the **FreeMoCap Project (FMC)** into a self-sustaining and expansive Open Source Ecosystem (OSE).

Our plan comprises 3 inter-woven foci -

1. A core software platform and framework for the measurement, analysis, and visualization of human and animal movement (FMC-Core)

2. A broad and diverse userbase representing wide array of backgrounds, interests, experience levels, and geographic sprea (FMC-Community)

3. A self-sustaining organization to support a dedicated team of core maintainers who ensure the healthy growth and long-term stability of the ecosystem (FMC-Foundation)

1.1 Intellectual Merit

- Enablabling tech-forward integrative research - Rosetta Stones and Systems Engineers - Training nextgen technowizards and cross-disciplinarians

2 Broader Impacts

- **Meager success:** - New useful tool - New body of research realted to human/animation perceptuomotor control - Education tools and strategy - **Expected outcomes:** - Support and sustain the growing community of 'freemocap' users, loosely organized around a shared love of the measurement, investigation, analysis, and expression of human and animal movement (broadly construed) - Sustainable organization and vibrant ecosystem existing as a proof-of-concept alternative organizational approach to broadscale academic research, education, and training - **Idealist future:** - Iterative solutions on 'project-scale' strategy produces a vibrant **ecosystem of ecosystems** which fundamentally changes the face of education and scientific research.

3 Objectives

3.0.1 FreeMoCap Software [FMC-S]

Aspirational Goals

- **All Levels Accessible.** FreeMoCap is usable by a 13-year old with no technical training and no outside assistance.

- **FreeMoCap == Best MoCap** FreeMoCap is the best motion capture software available for any application at any price

Specific Activitites

- **Automate Everything** Develop a sophisticated, extensible, and fastidiously documented system of continuous developmenet, integration, testing, validation, and diagnostics
- **Coherent poly-repo format** Develop and refine fractal polyrepo structure whereby the core software comprises a set of independent sub-repositories with a shared infrastructure with plugin and contribution templates
- **Monotonically increasing performance** Automated disganostics and validation tests on each version bump, maximum performance tracked over time should never decrease.
- **Docs Docs Docs.** Manage docs repo like the rest of the codebase, and treat our documentation, educational content, tutorials, and onboarding material as a core artifact.

- Technical Objectives - CI/CD - Sub-skellies - Documentation and onboarding - Community Development - Transition from Stadium to Federation [**egbahl2020**] - User XP tracking and educational trajectory shaping - Community support Activitites - Community grants Program - Community challenges program - FreeMoCamp/Con - Organizational - Setting up FMC-F - Define and support core maintainer team

7.1.2 Documentation and Educational Material

7.1.3 Datasets and derived models

7.2 The FreeMoCap Community (FMC-C)

7.3 The FreeMoCap Foundation (FMC-F)

7.3.1 Organization

7.3.2 Governance

7.3.3 Responsibilities

7.3.4 Licensing Model

8 Planned Activitites and Objectives

8.1 Ecosustem establishment and growth

8.1.1 Userbase Analysis/Engagement

8.1.2 AI Psuedo-Mentorship (SkellyBot)

8.2 Community Building

8.2.1 Annual Workshop/Conference: FreeMoCamp/Con

8.2.2 Community Challenges

8.2.3 Community Grants Program

8.2.4 Gamification and acheivement-based badges

8.3 Organization and Governance

8.3.1 Build admin infrastrcutre

8.3.2 Develop SOPs

8.3.3 Establish core maintainer roles and support

8.3.4 Develop 'Skelly Enhancement Proposal'[SEP] system

8.4 Continuous Development, integration, Evaluation

8.4.1 Development

8.4.2 Integration

8.4.3 Evaluation

Tests.

Validation.

Diagnostics.

8.5 Sustainability

8.5.1 Goals and Metrics

Growth

Stability

Performance

Revenue

8.6 Security and Privacy

8.7 Security

8.8 Privacy