Proposal for a Thesis

in the Field of [YOUR CONCENTRATION]

in Partial Fulfillment of the Requirements for the

Master of Liberal Arts Degree

Harvard University

Extension School

[CURRENT DATE]

[YOUR NAME]

I.

Tentative Title

Tentative title "Application of Neural Networks in Mathematics Assessment."

II.

Research Problem/Abstract

<Delete Later> [FOR CONCENTRATORS IN THE LIBERAL ARTS, USE "RESEARCH PROBLEM" AS THE HEADER. FOR CONCENTRATORS IN IT, USE "ABSRACT".]

[INTRODUCE YOUR TOPIC.]

[DESCRIBE YOUR RESEARCH QUESTION OR QUESTIONS.]

III.

Definition of Terms

Active User: one who uses a Recommender System.

Attrition Risk: the likelihood a student will stop studying in a session or course.

Cold-Start: a problem where a system cannot draw inferences for users or items before it acquires sufficient data to make an inference.

Collaborative Filtering (CF): a recommendation method that uses similarities between users and objects to make recommendations.

Deep Leaning-based Recommender Systems: a recommender based system where the recommender learns by example.

Gray Sheep: a subset of active users that do not agree with any group.

Interleaving: a method of training where the method of training alternates between minibatches

Learning Management Systems (LMS): a platform for the administration, documentation, tracking, reporting, automation, and delivery of educational courses.

Metadata: a data record about the recording of the data.

p-RNN (Parallel Residual Neural Networks): a network architecture based on independent residual neural networks combined for a collective inference.

Recommender Systems (RS): an algorithm to predict the rating a user would give an item.

Skill Estimation: a inference made about the abilities of a student.

Sparsity: a problem where a system does not get sufficient information from individual users to make inferences.

<Delete Later> [LIST TERMS IN ALPHABETICAL ORDER; DEFINE TERMS AS YOU ARE

USING THEM IN YOUR PROPOSAL; INCLUDE ACRONYMS, IF ANY]

[TERM]: [DEFINITION]

[TERM]: [DEFINITION]

[TERM]: [DEFINITION]

IV.

Background and Significance

<Delete Later> [PROVIDE THE BACKGROUND OF THE TOPIC; DESCRIBE PRIOR

RESEARCH AND HOW THE PROPOSED RESEARCH OR ARGUMENT FITS IN THIS

FRAMEWORK.]

V.

Research Methods

<Delete Later> [DECRIBE THE APPROACH OR METHODS OF RESEARCH YOU WILL BE USING.

THIS SECTION MAY ALSO INCLUDE USE OF HUMAN SUBJECTS, INVESTIGATOR QUALIFICATIONS, ISSUES AROUND CONFIDENTIALITY AND PATENTS, POTENTIAL CONFLICTS OF INTERESTS, AND FUNDING SOURCES.]

VI.

Tentative Schedule

<Delete Later>Milestone and stage 1	Date
Milestone and stage 2	Date
Research milestone...	Date
Thesis draft completed	Date
Final text submitted to thesis director and research advisor	Date
Graduation	Date

VII.

Bibliography

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<Delete Later>[DIVIDE THIS SECTION INTO THE FOLLOWING SUB-SECTIONS:

SINGLE-SPACE WITHIN EACH ENTRY.

DOUBLE-SPACE BETWEEN ENTRIES.

INDENT THE SECOND AND SUBSEQUENT LINES OF EACH ENTRY RELATIVE TO THE FIRST LINE.

STYLE IS APA FOR BIO, PSYCH, ANTHRO, IT, BIOTECH, AND SUSTAINABILITY; CMS FOR HISTORY, INTERNATIONAL RELATIONS, AND GOVERNMENT; AND MLA FOR HUMANITIES.]