Directed Study Preliminary Approval Form

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Please complete the information below in **print** or **type** and return to the Office of the NYUAD Registrar.

University ID: N N17066531 Net ID mp3255

Pell (Last Name) Morgante (First Name) Orion (Middle Name (s))

Year: 1st ☐ 2nd ☑ 3rd ☐ 4th ☐ Current Faculty Mentor: Adam Ramey

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Students are strongly encouraged to discuss with their faculty mentor the possibility of developing a directed study as early as possible. This preliminary application should be completed as far in advance as possible and must be submitted with at least one week left in the add/drop period.

Preliminary Requirements:

Proposed Semester: Spring 2014

Proposed Course Title: Applications of Machine Learning and Computational Heuristics

Discipline (eg. Econ): Computer Science

Number of Credit Hours (typically 4): 4

Indicate how you anticipate this course will count towards your degree ☑ Major Elective ☐ General Elective

Intended Instructor: Dennis Shasha

Instructor Email Address: shasha@cs.nyu.edu

Instructor Affiliation (e.g. NYUAD, CAS, etc.): Courant

Planned or Declared Major(s): Computer Science CumulativeGPA: 3.42

Other courses planned or scheduled in the term:

Microeconomics
Global Banking & Financial Markets
Software Engineering
Operating Systems

Rationale (attach additional sheet as needed):

See attached

_____ _____
Student Signature Date

_____ _____ Recommended? ☐ Yes ☐ No
Mentor Signature Date

_____ _____ Recommended? ☐ Yes ☐ No
Divisional Dean Signature Date

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Preliminary Approval: _____Approved _____Denied Log_____ Notify _____

ACADEMIC RATIONALE

Background

In Professor Shasha's January term class, *Heuristics*, I had the chance to use computational methods to solve interesting problems in ways which the theoretically-oriented computer science curriculum here in Abu Dhabi doesn't necessarily offer. As part of the class, I began a project to automatically analyze the content of research papers to provide a helpful glossary of terms and acronyms for readers. On Professor Shasha's invitation, I would like to continue this research under his direction and also explore additional approaches to computational heuristics.

Natural Language Processing

Artificial intelligence is increasingly useful and effective in solving a variety of challenging computational problems, particularly with the emergence of large-scale data sources. However, the academic curriculum at NYUAD does not provide much background in practical techniques for dealing with such massive datasets or applying artificial intelligence to real-world problems. Hence, this directed study will focus on practical techniques and applications for a variety of machine learning problems.

Approach

The goal of this course is to develop a strong understanding of real-world natural language processing and heuristic frameworks. This will be achieved through a combination of a semester-long research project and occasional heuristic puzzles. The research project, already approved by Professor Shasha, will be to create and release a tool to disambiguate acronyms in academic papers through novel machine learning approaches. This research will be supplemented through attempts at puzzles taken from Professor Shasha's various puzzle books.