Computer Science Master’s Thesis Guide
CIS 701B
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1. GENERAL PROCEDURES

This section describes general guidelines for the Master’s thesis, including the required proposal, topics, advisors, deadlines, associated courses, etc. Section 2 contains a list of current faculty members and their areas of interest. This list is intended to guide students in their search for an advisor whose interests overlap with those of the student. Section 3 describes the required format for the thesis proposal. Section 4 describes the format of the final thesis document and the procedure for submitting it.

1.1 Thesis Proposal

The THESIS PROPOSAL is the background and planning document for the thesis. It must be done with professional care and thoroughness. It must be the product of your own original thought and effort. Any use of others’ work must be properly referenced in accordance with standards of scholarship in general and the NJIT Honor Code in particular.

The thesis proposal is written by the student and must be approved by his/her advisor and by the CS department before the student enrolls in the thesis course CIS 700B. Master's students should contact a prospective thesis advisor as early as possible in their course of study since the thesis advisor may expect certain courses to be taken in preparation for the thesis. The proposal itself should be developed in consultation with the advisor. It should be initiated by the first half of the semester prior to the semester in which the thesis is done, and even earlier for some advisors. Completed proposals are submitted to the CS department and reviewed for approval by the Associate Chair for Graduate Studies.

1.1.1 Proposal Deadlines

For theses that are to begin in a Spring semester, the proposal is due at 2 PM on November 15 (or the first business day after November 15 if the office is closed that day). For theses that are to begin in a Summer term or Fall semester, the proposal is due at 2 PM on April 15 (or the first business day after April 15 if the office is closed that day). If approved, the thesis is then implemented under the guidance of the advisor.

1.1.2 Submission Procedures

A hard copy of the proposal, with a signed cover sheet as shown in Section 3 of this document, is submitted to the CS Department Graduate Advisor for approval. Submit the proposal on or before 2 PM of the deadline date. Retain a copy of the proposal for yourself. The intended faculty advisor for the thesis must be indicated and his/her signature must already be on the cover sheet when the proposal is submitted to the Department. When the student submits the proposal, he or she signs up on the next available line on the list of thesis proposals. The student should make a note of the proposal number, since it will be needed in subsequent steps in the process. The student does NOT submit the electronic form CS102.

1.2 Department Action On Proposal
The CS Department response to the submitted proposal will be POSTED on the MS in CS website (http://www.cs.njit.edu/~mcs) before the first day of the final exams. The possible Department responses are: ACCEPTED: the student may start work on the thesis, but should contact the advisor for comments and an advisement schedule; CONDITIONALLY ACCEPTED: the student must modify the proposal according to the advisor's indications and approval; upon subsequent approval, the student may then start the thesis; REJECTED: the proposal is unacceptable: the student may contact the faculty reviewer of the proposal for advice.

Proposals that are conditionally accepted must be resubmitted to the Department one week before the start of the next semester. A student should withdraw from CIS 700B if the revised proposal is not approved. If a proposal is rejected the student must withdraw from the thesis course and pursue the project or “two advanced courses” option. Note that these options require the student to take 3 more credits of elective courses than are required for the thesis option, for a total of 30 credits for the project option and 33 credits for the “two advanced courses” option.

1.3 Thesis Topics

Thesis topics vary greatly. Normally a topic is suggested by an advisor. A student may propose a topic to the advisor, but an advisor has every right to refuse to supervise a thesis on a student-generated topic. The thesis topic is expected to be of sufficient depth so as to lead to a paper submitted for publication in a professional journal or presentation at a professional conference. Such papers may be a joint publication with the advisor as second author. It is important to confirm the appropriateness of a topic with an advisor as early as possible in the development of the proposal. In order to assist students in finding an advisor who is likely to propose a topic of interest to the student, a list of faculty research interests is included in Section 2 of this document.

1.5 Master's Thesis Course

The course for the Master's Thesis is CIS 701B. The 6-credit thesis is normally split into two semesters, 3 credits per semester. The section of CIS 701B that you enroll in depends on your advisor - each advisor has a separate section. YOU MUST HAVE YOUR REGISTRATION FORM FOR THE APPROPRIATE SECTION OF CIS 701B SIGNED BY YOUR PROJECT ADVISOR FOR EACH SEMESTER YOU ARE ENROLLED IN THE COURSE. CIS 701B has no scheduled hours; that is up to you and your advisor. You must contact your advisor regularly and keep your advisor well-informed regarding the progress of your work.

A student who is not able to complete the thesis in two semesters must notify the advisor one week before the last day of classes of the second semester and supply a progress report. Normally such students would receive a grade of “S.” If your thesis takes more than 2 semesters, then you must enroll in an additional 3 credits for the third semester. Of course, only six credits of a Master's thesis may be counted towards meeting the CS Master's degree requirements. A student who does not enroll in a succeeding semester or who wishes to change advisors must resubmit a proposal prior to the semester in which they plan to do the work. If an advisor change is involved, then both advisors must be aware of and agreeable to the change. Students who find it necessary to use more than 3 semesters to complete the thesis must request permission to do so from the chairman of the department and provide a written explanation of the circumstances.
2. FACULTY RESEARCH INTERESTS

The following is a current list of thesis advisors and their areas of interest. The telephone extension of the advisor is shown after the name (XXXX). The common prefix (973) 596- is not shown. All email addresses have the extension “njit.edu” which is also not shown. Students may also consult the web page http://www.cs.njit.edu/research.html. This page lists Computer Science faculty grouped by research interests.

You may not select an adjunct instructor or a special lecturer as your advisor.

Some advisors expect you to take certain courses in preparation for the thesis. These are shown after their list of interests, but details should be checked with the advisor. Some advisors also run CIS 785 seminars on particular topics. These seminars are not counted towards your degree; however, they are a useful way to identify and prepare for a thesis topic.

MICHAEL A. BALTRUSH (3386); mab@cis, Associate Professor, Ph.D., University of Connecticut. Microcomputers, UNIX, Monitoring.


JAMES CALVIN (3378); calvin@cis, Associate Professor, Ph.D. Stanford University. Probabilistic Analysis of Algorithms, Global Optimization, Regenerative Simulation, Information Based Complexity, Optimization of Stochastic Systems, Search Theory, Stochastic Processes, Applied Probability.

JOHN CARPINELLI (3536); carpinelli@njit, Associate Professor of Electrical and Computer Engineering, Ph.D., Rensselaer Polytechnic Institute. Parallel Processing, Computer Architecture, Interconnection Networks, Biomedical Computing, Computer-Aided Instruction.

BARRY COHEN (5214); Barry.Cohen@njit.edu, Assistant Professor, Ph.D. SUNY Stony Brook. Algorithms, Biomedical Informatics.

ARTUR CZUMAJ (3369); czumaj@cis, Associate Professor, Ph.D. University of Paderborn, Germany. Theoretical Computer Science, Analysis and Design of Algorithms, Randomized Algorithms and their Probabilistic Analysis, Graph Algorithms, String Matching Algorithms, Computational Geometry, Combinatorial Optimization, Parallel and Distributed Algorithms, Complexity Theory.

FADI DEEK (2997); fadi@cis, Associate Professor of Information Systems and Associate Dean of the College of Computing Sciences, Ph.D., New Jersey Institute of Technology. Software

JAMES GELLER (3383); geller@cis, Professor, Ph.D., SUNY Buffalo. Artificial Intelligence, Database Systems, Biomedical Informatics, Ontologies, Object-Oriented Systems, Object-Oriented Databases, Parallel Processing, Parallel Reasoning, Knowledge Based Systems, Expert Systems, Natural Language Processing, Character Recognition.

ALEXANDROS GERBESSIOTIS (3244); alexg@cis, Assistant Professor, Ph.D., Harvard University. Parallel Computing; Architecture Independent Parallel Algorithm Design; Parallel Algorithms for Combinatorial and Numerical Problems; Experimental Algorithmics; Graph Theory and Combinatorics; Network Performance Assessment under Realistic Parallel Computer Models.

RICKI GOLDMAN-SEGALL (5683); ricki@njit.edu, Professor of Information Systems, Ph.D., Massachusetts Institute of Technology.

ELSA GUNTER (3382); elsa@cis, Associate Professor, Ph.D. University of Wisconsin, Madison. Software engineering, formal methods, design and use of automated and interactive theorem provers, mathematical semantics of programming languages, proof theory and type theory, order theory, finite solvable group theory.

STARR ROXANNE HILTZ (3388); roxanne@eies2, Distinguished Professor of Information Systems, Ph.D., Columbia University. Collaborative Systems; Information Systems Evaluation; Social Impacts of Computer and Information Systems; Design of User-Oriented Interactive Computer Systems; Computer- Mediated Communication; Management Information Systems; Group Decision Support Systems. MS thesis students must have had CIS 675 with grade of at least B.

EDWIN S.H. HOU, (3521); hou@megahertz, Associate Professor of Electrical & Computer Engineering, Ph.D., Purdue University. Scheduling, Genetic Algorithms, Neural Networks, Nonlinear Optimization techniques, Robotics, Infrared Imaging, and Monitoring and Control of Semi Conductor Process.

DAO-CHUAN HUNG (3384); dhung@cis, Associate Professor, Ph.D., Purdue University. Computer Vision; Image Processing; Intelligent Manufacturing Inspection; and Partial Shape Recognition.

IL IM (5644); ilim@cis, Assistant Professor of Information Systems, Ph.D., University of Southern California. Personalization technologies, Electronic business, Supply chain management, Business process design, Web technologies

GAD (QUENTIN) JONES (5290); Quentin.Jones@njit.edu, Assistant Professor of Information Systems, Ph.D., University of Haifa, Israel.
JOSEPH LEUNG (3387); leung@cis, Distinguished Professor, Ph.D., Pennsylvania State University. Scheduling Theory, Real-Time Systems, Combinatorial Optimization, Complexity, Design and Analysis of Algorithms.

CHENGJUN LIU (5280); liu@cis, Assistant Professor, Ph.D., George Mason University. Computer Vision, Pattern Recognition, Image Processing Face Recognition, Automatic Target Detection and Recognition, Content-based Video and Image Retrieval, Evolutionary Computation, Neural Computation

QIAN HONG LIU (2872); lily@cis, Assistant Professor, Ph.D., New Jersey Institute of Technology. Database Systems, Online Query Processing, Web Technologies and Electronic Commerce, and Information Retrieval.

CONSTANTINE N. MANIKOPOULOS, (3553); cnm8784@tesla, Associate Professor of Electrical and Computer Engineering, Ph.D., Princeton University. Computer Networks, Parallel Processing Applications, Neural Networks, and Image Processing.

DAVID MENDONCA (5212); mendonca@adm.njit.edu, Assistant Professor of Information Systems, Ph.D., Renesselaer Polytechnic Institute. Group decision making, Knowledge engineering and management, Decision support systems, Creativity studies; applications in emergency management.

JAMES A.M. McHUGH (3394); mchugh@cis, Professor, Ph.D., Courant Mathematical Institute. Algorithmic Graph Theory; Parallel Algorithms; Design and Analysis of Algorithms; Data Structures, Multimedia Applications.

ALI MILI (5215); mili@cis, Professor, Ph.D., University of Illinois. Software engineering.

MARVIN K. NAKAYAMA (3398); marvin@cis, Associate Professor, Ph.D., Stanford University. Simulation Modeling and Analysis, Fault-tolerant Systems, Communication Networks, Statistics, Applied Probability.

DAVID NASSIMI (5645); nassimi@cis, Associate Professor, Ph.D., University of Minnesota. Parallel Processing, Architectures and Algorithms; Interconnection Networks, Data Routing; Parallel Permutation and Sorting.

VINCENT ORIA (5767); oria@cis, Assistant Professor, Ph.D., Ecole Nationale Superieure des Telecommunications, Paris. Database.

TEUNIS OTT (5776); tjo@cis, Professor, Ph.D., University of Rochester. Performance Analysis, Telecommunications and Networking.

RAVI PAUL (5237); paulr@homer.njit.edu, Assistant Professor of Information Systems, Ph.D., Clemson University. Software Engineering for Information Systems Development, Requirements Engineering, Management Information Systems, Customer Relationship Management (CRM), B2B
E-Commerce, Integrated Enterprise Systems, Data Exchange in the Supply Chain, Configuration Management (CM), and Knowledge Management (KM).

YEHOSHUA PERL (3392); perl@cis, Professor, Ph.D., Weizmann Inst., Israel. Design and Analysis of Algorithms; Data Structures; Data Compression; Design of Networks; Sorting Networks; Graph Theory; Hypertext Systems.

MICHAEL RECCE (5490); recce@cis, Associate Professor, Ph.D., University College London. Neurophysiology, Neural Basis for Spatial Localization, Models of Spatial Processing, and The Application of Neural Network Algorithms in Robotics.

JOHN W. RYON, III (3390); ryon@cis, Associate Professor, Ph.D., Stevens Institute of Technology. Software Engineering (Interactive Systems, User Interface Design Methodology), Computer Graphics (Windows), Theoretical and Computational Neuroscience (Neural Networks and Dynamic Models).

EDWARD SARIAN (3391); sarian@cis, Associate Professor, Ph.D., Stevens Institute of Technology. Mathematical Foundations of Computing; Computational Mathematics and Algorithms; Automata and Formal Languages.

JULIAN M. SCHER (3395); scher@cis, Associate Professor of Information Systems, Ph.D., New York University. Discrete Event Systems Simulation Languages; Probabilistic and Statistical Methodologies used in Simulation to Simulate Stochastic Phenomena Applications, Database Design, Data Modeling, Semantic Object Data Models and Desktop DBMS, Decision Support Systems, Productivity Toolware, Computer Science Education.

RICHARD B. SCHERL (2657); scherl@cis, Assistant Professor, Ph.D., University of Illinois. Artificial Intelligence, Knowledge Representation and Reasoning, Logic and Software, Computational Linguistics, Cognitive Science.

FRANK SHIH (5654); shih@cis, Professor, Ph.D., Purdue University. Image Processing; Computer Vision; Computer Graphics; Computer Architecture; Artificial Intelligence; Expert Systems; Neural Networks.

ANDREW SOHN (2315); sohn@cis, Associate Professor, Ph.D., University of Southern California. Parallel Computing, Multithreading and Multithreaded Architectures, PC Clusters, Distributed-memory Multiprocessor Architectures, and Computational Science on Large-scale Parallel Machines.

DIMITRI THEODORATOS (5213); dth@cis, Associate Professor, Ph.D., University of Paris XI. Database Theory, Query Languages, Query Processing and Optimization, Data Warehousing, On-Line Analytical Processing, Data Integration, Databases and Web, Deductive Databases.

ALEXANDER THOMASIAN (6597); athomas@cis, Professor, Ph.D., University of California, Los Angeles. Computer and storage architectures, modeling and analysis of computer and communication systems, traditional and image database systems, transaction processing.
Marilyn Mantei Tremaine (5284); Marilyn.M.Tremaine@njit.edu, Professor of Information Systems, Ph.D., University of Southern California. Auditory Interfaces, Mobile Collaboration, Interfaces for Mobile Computing, Interfaces for Telerehabilitation.

Murray Turoff (3399); murray@vc, Distinguished Professor of Information Systems, Ph.D., Brandeis University. Information Systems; Computer Mediated Communications and Groupware; Collaborative Systems; Design of Applications and Interfaces; Management Information Systems; Decision Support Systems; Modeling; Planning; Delphi Design; Forecasting and Planning Methodologies; Computers and Society.

Barbel Van de Walle (5897); bartel@cis.njit.edu, Assistant Professor of Information Systems, Ph.D., University of Gent, Belgium. Group decision and negotiation support.

Boris Verkhoovsky (3393); boris@cis, Professor, Ph.D., Latvia State University, USSR. Data Communication Networks; Distributed Processing; Algorithms Design and Analysis; Large-Scale Systems Analysis and Design; Optimal Algorithms; Computational Complexity; Communication Networks Design and Analysis; Distributed Algorithms; Scientific Computing; Integrated Networks.

Jason T.L. Wang (3396); jason@cis, Professor, Ph.D., Courant Institute, New York University. Data Mining and Databases, Knowledge Engineering, Software Development, Pattern Analysis, Computational Biology, Information Retrieval and Process Management on the World Wide Web.

Brian Whitworth (2666); bwhitworth@acm.org, Assistant Professor of Information Systems, Ph.D., Waikato University, New Zealand. Multi-media design to fit human cognitive processes, generation of computer-mediated agreement, computer-mediated education, interpersonal behavior on computer networks, virtual community environment design and legitimacy issues.

Brook (Yi-Fang) Wu (5285); Assistant Professor of Information Systems, Ph.D., State University of New York at Albany. Knowledge Organization, Information Retrieval, Natural Language Processing.

3. THESIS PROPOSAL FORMAT

Sample Cover Sheet for Proposal

CIS 701B Master’s Thesis Proposal

Automated Software Configuration Management

and Change Control System (SCM)

Submitted to the
Department of Computer Science
College of Computing Sciences
New Jersey Institute of Technology

in Partial Fulfillment of
the Requirements for the Degree of
Master of Science
by
John P. McQueue

APPROVALS

Agree to Advise: _________________________________
(Thesis Advisor)

Date Submitted: _________________________________

Approved by: _________________________________
(Associate Chair for Graduate Studies)

Date Approved: _________________________________
4. THESIS FORMAT AND SUBMISSION PROCEDURE

N.B. The majority of this section was taken, with some modifications, from the Office of Graduate Studies website at

4.1 Thesis Format

4.1.1 Sources of Information on Thesis Format

The NJIT-approved format for Master's Theses and Doctoral Dissertations is given in the second edition (1992 printing with the purple, gold, and white cover) of *Guidelines for Writing Theses and Dissertations* by Herman A. Estrin and Timothy E. Roche. This document is available at the NJIT Bookstore and is on reserve at the library.

Information is also available in person at the Office of Graduate Studies and through the Office of Graduate Studies website: http://www.njit.edu/Directory/Admin/Graduate_Studies/Welcome.html. The Graduate Student Association occasionally sponsors Thesis/Dissertation workshops.

4.1.2 Order of Pages for Thesis

- Two (2) blank pages;
- Abstract (no page number; 150 words or less for a Master's Thesis);
- Title Page (no page number but counted as page i);
- Copyright Page (optional, no page number but counted as page ii if included, insert blank page if not used);
- Approval Page (no page number but counted as page iii);
- Biographical Sketch (counted as page iv and numbered on bottom);
- Dedication Page (optional but often included, page number is shown);
- Acknowledgment Page (optional but almost always included, page number is shown);
- Table of Contents (page numbers are shown);
- List of Tables (if needed, page numbers are shown);
- List of Symbols (if needed, page numbers are shown);
- Text (page numbers are shown, begins with page 1);
4.2 Process and Timetable for Thesis Document Approval

The CS Department requires a thesis student to submit a Thesis Committee Form to the Associate Chair for Graduate Studies in the CS Department no later than the second week of the semester in which the student plans to complete the thesis. The form must contain the signature of the thesis advisor and two other faculty members who have agreed to serve on the student’s committee.

The following subsections outline the process required by the Office of Graduate Studies. The Graduate Studies process for format review and final submittal should involve no more than three brief visits to the Graduate Studies Office. The responsibility for review and approval of technical content, written and graphical presentation of technical material, and readability (including grammar) is, as it should be, that of the student and the advisor.

4.2.1 Tasks to be performed 2-3 months before Commencement

Student makes the first visit to Graduate Studies Office for review of sample title page, abstract, front matter pages, text pages, figures, tables, and references. The student should retain marked-up pages and bring them in with revised document for a later visit. This visit can and should be done in advance of the defense and the technical approval by faculty advisors and committees.

DEGREE CANDIDATES SHOULD BE SURE THAT THEY HAVE APPLIED FOR THE APPROPRIATE DEGREE THROUGH THE REGISTRAR AND PAID THE COMMENCEMENT/GRADUATION FEE BY THE DATELINES ESTABLISHED BY THE REGISTRAR. All other financial obligations and degree requirement should be satisfied.

4.2.2 Tasks to be performed 1-2 months before Commencement

Student brings in final documents as follows:

- Original thesis on 100% cotton fiber paper, minimum 24 lb, heavy weight, bond finish as described in the Estrin/Roche manual and other documents. Original and copies must be on flourescent white paper.

- Two copies (minimum number) on 25% cotton fiber paper. A third copy for binding is strongly recommended if the student desires a personal copy.

- One extra copy of abstract and approval page.
• Receipt from Bursar showing payment of binding fee; a Binding Request Form will be provided by the Bursar.

Once everything is in order, the student and Graduate Studies Office will complete a document informing the advisor that the thesis/dissertation has been accepted and that an appropriate final grade can be assigned (A, B+, B, C+ or C or Master's Thesis) NOTE: NJIT POLICY REQUIRES A THESIS GRADE OF B OR BETTER FOR GRADUATION. C+ OR C ON A MASTER’S THESIS WILL NOT ALLOW GRADUATION.

The Graduate Studies Office will forward the original and the copies to the Library, which will follow through with the bindery, receipt of bound volumes, and subsequent notification by letter that the bound documents have been received.

Allow a minimum 6-8 weeks time period for the receipt of the bound volumes to be available at the Library.
4.2.3 Thesis Committee Form

STUDENT NAME:______________________________________________________________

ID #:________________________________________________________________________

THESIS TITLE:_________________________________________________________________

PROPOSAL NUMBER:___________________________________________________________

SEMESTER IN WHICH THESIS WILL BE COMPLETED:______________________________

DATE:________________________________________________________________________

SIGNATURES:

THESIS ADVISOR:______________________________________________________________

DATE:________________________________________________________________________

COMMITTEE MEMBER:_________________________________________________________

DATE:________________________________________________________________________

COMMITTEE MEMBER:_________________________________________________________

DATE:________________________________________________________________________