MEMO

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TO: Senate

FROM Wade Parkhouse, Dean, Graduate Studies

RE Faculty of Communication, Art and Technology

CC Tom Calvert

DATE February 9, 2010

For information

Acting under delegated authority at its meetings of 8 February 2010, the SGSC approved the following curriculum revisions:

School of Interactive Arts and Technology

New course: IAT 847-3 Metacreation: Endowing Machines with Creative Behaviours

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at http://www.sfu.ca/senate/Senate_agenda.html following the posting of the agenda. If you are unable to access the information, please call 778.782.3168 or email bgrant@sfu.ca.
**NEW GRADUATE COURSE PROPOSAL FORM**

**Subject:** IAT  
**Catalog Number:** 847  
**Course Title:** Metacreation: Endowing Machines with Creative Behaviors  
**Short Title (appears on transcripts etc.):** Metacreation

**Course Description for Calendar:** (append a course outline as a separate document)

Theory and practice of the metacreation as a contemporary approach to generative art and design that involves using tools and techniques from artificial intelligence, artificial life, and machine learning to develop software that is creative on their own. Through the project students will build software that exhibits behaviour that would be considered creative if performed by humans. Students who completed IAT 811 in 2008 or 2009 or IAT 888 in 2010 are ineligible to take this course for further credit.

**Units:** 3

**Available Course Components:** (select all that apply)

- [X] Lecture
- [ ] Seminar
- [ ] Laboratory
- [ ] Practicum

**Prerequisites:** (if any) IAT 800

**Campus at which course will be offered:** Surrey

**Estimated Enrolment:** 12  
**The term course will first be offered:** Spring 2011

**Frequency of course offering:** yearly

**Grading Basis:** [X] Graded  
[ ] Satisfactory/Unsatisfactory  
[ ] In Progress/Complete

**Justification:**

This is a project-based course to which the usual grading system is well suited.

**Resources:**

**Faculty member(s) who will normally teach this course:**

(append information about their competency to teach the course)

Philippe Pasquier, Steve diPaola

**Number of additional faculty members required in order to offer this course:** 0

**Additional space required in order to offer this course:** (append details) none

**Additional specialized equipment required in order to offer this course:** (append details) none

**Additional Library resources required:** (append details) Annually $0 One-time $0

*If additional resources are required to offer this course, the department proposing the course should be prepared to provide information on the source(s) of those additional resources.*

*Upon approval of the course proposal, the Dean of Graduate Studies office will consult with the department or school regarding other course attributes that may be required to enable the proper entry of the new course in the student record system.*
IAT 847-3 Metacreation: endowing machines with creative behaviors

NOTE: Students who completed IAT 811 in 2008 or 2009 or IAT 888 in 2010 are ineligible to take this course for further credit.

Course Description
Metacreation is the idea of endowing machines with creative behaviour. Metacreation, as the contemporary approach to generative art/design, involves using tools and techniques from artificial intelligence, artificial life and machine learning (themselves inspired by cognitive and life sciences) to develop softwares that are creative on their own. In other words, a software is a metacreation if it exhibits behaviors that would be considered creative if performed by humans.

This graduate course will provide you with the opportunity to study the theory and practice of metacreation. Tools and techniques from artificial intelligence, artificial life and machine learning will be introduced and exemplified through the study of existing metacreations using them. The course will be organized so that making a project by exploring metacreation in your area of research becomes the primary focus. The interweaving of related theoretical and practical issues will help you situate your work within a larger perspective on art, science and technology.

Pre-requisites and course enrollment
This is an elective course in which all SIAT graduate students can enroll. While it is not a formal pre-requisite, students will benefit from having completed a foundational multimedia programming computation course (e.g. java, processing) such as IAT 800 or have good knowledge of at least one prototyping environment (MAX/MSP/JITTER, Isadora or PureData/GEM). Students without a strong background in computer science need to contact the instructor prior to enrollment.

Topics
- Artificial intelligence (autonomous agents, cognitive and reactive agent architectures, multi-agent systems, agent communication)
- Artificial life (evolutionary computing, cellular automata, swarm intelligence)
- Machine learning (artificial neural networks, instance-based learning, reinforcement learning)
- Related issues: theory of creativity, history of generative art, philosophy of science/technique (technophobia vs technophilia), philosophy of mind, cognitive sciences, validation techniques.
Outcomes
The goal of this course is to introduce theories and approaches to metacreation, that is, the design of machines endowed with creative behavior. Each student will exploit some of the techniques introduced in the course through a project. By doing so, the students will deepen their understanding of a variety of techniques from the fields of artificial intelligence, artificial life and machine learning as well as exercise their research skills. The concrete goal of the course is to produce a research paper presenting the student’s work (theoretical background, system and/or experiments, results, discussion and related work and conclusion) that is as ready as possible for submission in a high profile conference or journal.

Evaluation and Grading
30% Theoretical research (includes a presentation in class)
30% Project (10% process, 10% result, 10% in-class presentation and demonstration)
30% Research Paper (refining and presenting all of the above)
10% Participation

References
This is a graduate course. In addition to the reference material, students will be responsible for finding research papers and texts suitable for the work undertaken.

Art and Science:


Science:


