CS776 Evolutionary Computation

Sushil J. Louis

http://www.cse.unr.edu/~sushil

SEM 237 (784-4315)

August 28, 2017

TextBooks


Office hours

- MW from 1:00 p.m. - 2:30 p.m.
- And by appointment. Send email to sushil@cse.unr.edu

Course objectives, structure, requirements, outcomes

I will introduce search in AI, then genetic and evolutionary computing algorithms and their theory in the first four weeks of the course. Students will be presenting selected papers for the next four weeks. You may present an evolutionary computing paper that interests you, but need my prior approval. You can then work in teams on a mutually agreeable research problem or project and are welcome to work on areas that interest you. Again thought, you need my approval and a clear understanding of the scope.

This semester I am most interested in evolutionary computing approaches to

- Games
- Adaptive virtual, augmented, and mixed reality interfaces
- Network optimization, intrusion detection,
- Co-evolution

Please talk to me soon about projects – the sooner you get started the better you will do.

There are several ways to do well in this class.

- **Research:** Do publishable research. If you don’t know how to do research this course will also teach you how. You will investigate a research problem that I think I understand and to which I am reasonably sure a solution exists.
• **Development**: Develop an industrial strength interactive (over the web) prototype of an evolutionary computing algorithm that solves scheduling, TSP, or other broadly interesting problem. Your code will implement the best known evolutionary algorithm for the problem at hand and will be runnable over the web.

• **Research and Development**: Attack a well defined sub-problem (I know this problem can be solved and probably how to solve it) and distribute a demo of your work on the web.

Groups are encouraged but need my permission. Project presentations will be at the end of the semester. While working on your problem, you will be asked to find, read, and present papers pertaining to your problem, or that you find interesting. Become familiar with library and internet resources. In addition to your presentations, there may be research presentations from graduate students, faculty, and other speakers.

Finally, you will learn how to efficiently read technical papers, write technical reports, present technical work, and perform scientific research and development. **I encourage and require** enthusiastic class participation.

Please look in [http://www.cse.unr.edu/~sushil](http://www.cse.unr.edu/~sushil) for pointers to papers and other information useful for this course. I would like each of you to set up a web page and keep a pointer to your work (graphical and textual) there. Do not, DO NOT, email me your assignments. You may use resources in the ECC ([https://www.unr.edu/engineering/student-resources/engineering-computing-center](https://www.unr.edu/engineering/student-resources/engineering-computing-center)) when you need extensive computing resources.

Your grade will depend on assignments, presentations, and project reports and we will use the +/- grading system. I will expect to see you after each presentation to discuss the presentation and assign you a grade. **Any person or group producing publishable work gets an automatic A.** Assignments are due every week for the first four weeks of the course. Late assignments are not accepted.

Your grade will be calculated from the following table.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Presentations</td>
<td>20%</td>
</tr>
<tr>
<td>Project and Report</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Communications**

If I need to communicate with the class as group I’ll place a notice on the class web page. You are required to check the website and your UNR email every day. Make sure your email information in MyNevada is up to date and implement mail forwarding if you need to. Other Internet resources can be found on the class web page.

This is a research oriented class. Research projects or research and development projects that you start in this class will usually constitute the bulk of a Master’s or Ph.d. thesis or professional paper.

**Academic Success Services**

Your student fees cover usage of the Math Center (784-4433 or [www.unr.edu/mathcenter/](http://www.unr.edu/mathcenter/)), Tutoring Center (784-6801 or [https://www.unr.edu/tutoring-center](https://www.unr.edu/tutoring-center)), and University Writing Center (784-6030 or [http://www.unr.edu/writing_center/](http://www.unr.edu/writing_center/)). These centers support your classroom learning; it is your responsibility
to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

**Statement on Academic Dishonesty**

Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student’s enrollment without a grade, giving an F for the course or for the assignment. For more details, see the University of Nevada, Reno General Catalog.

**Statement of Disability Services**

Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center (Pennington Student Achievement Center, Suite 230) as soon as possible to arrange for appropriate accommodations.

**Statement on Audio and Video Recording**

Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.