

“Computational Methods in Economics” ECON 21410

Taught by John Eric Humphries, spring 2014

Idea for the Course:

A course aimed at preparing students to: begin empirical research, learn necessary computational tools for research, and prepare for graduate school. Taught almost as a “vocational” course to complement the theoretical training taught to undergraduates.

In some ways a “programming” course, but focused on learning then implementing economic models. Final project was writing a short research paper.

Overall Goals:

- 1) Take theoretical models and translate them into useful economic simulations and empirical tools.
- 2) Use programming for solving economic problems.
- 3) Apply numeric methods to solve economic problems.
- 4) Develop, implement, and manage an empirical project.
- 5) Produce professional output to clearly convey your results.

Specific Capabilities:

- Read and understand R code. Write clear, documented, and reusable R code.
- Summarize empirical work using \LaTeX.
- Use packaged functions and libraries to do work for you.
- Implement your own econometric methods and simulations to solve problems others have not already solved for you.
- Numeric optimization problems

Biggest Challenges:

- Balance between research skills and programming skills.
- Balance between meaningful projects and difficulty of the econometric and economic tools needed.
- **Extremely varied background in programming.**

Biggest Successes:

- Github forum and wiki.
- Project-based course structure.
- Research projects (learn a model, then implement it).
- Live coding.

Students could open “issues” to ask questions:

EXAMPLE: Partial list of “open issues” opened by students which anyone can respond to.

New Issue

33 Open

57 Closed

Sort: Newest

1

2

<input type="checkbox"/>	Close	Label ▾	Assignee ▾	Milestone ▾	
<input type="checkbox"/>		Some times from my machine from the code in class today.			#90
	Opened by johnerichumphries 14 days ago				
<input type="checkbox"/>		Course Follow Up			#89
	Opened by Matthew-Klein 14 days ago 1 comment				
<input type="checkbox"/>		Proving Causation, not just Correlation			#88
	Opened by ssingleton 17 days ago				
<input type="checkbox"/>		cov(x, 1/y) = ?			#87
	Opened by ssingleton 18 days ago 6 comments				
<input type="checkbox"/>		Panel Data and Random Effects Model			#85
	Opened by ssingleton 28 days ago				
<input type="checkbox"/>		sum() being weird			#84
	Opened by tylermorris 29 days ago 3 comments				
<input type="checkbox"/>		Apple ARIMA Standard Errors, Issue			#83
	Opened by Jacob-Conway on May 18 3 comments				
<input type="checkbox"/>		Likelihood Ratio Test for Random Walk			#80
	Opened by akshat1992 on May 17 3 comments				
<input type="checkbox"/>		Finding the Optimal portfolio			#79
	Opened by zphang on May 17 5 comments				
<input type="checkbox"/>		Probability Density Function			#78

Students answer questions:

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ECON 21410

Schelling Algo Speed #21

EXAMPLE: Students answering eachothers' questions on the forum.

 Closed

enochitchan opened this issue on Apr 9 · 2 comments



enochitchan commented on Apr 9

My Schelling algo is currently running extremely slowly for populations above, say 150. I have an inkling that it has to do with my neighbor-checking loop below:

```
for (neigh in 1:neigh.tot) {  
  if (datatype[ind] == datatype[which(v_dist==sort(v_dist)[neigh+1],arr.ind = TRUE)])  
    neigh.count <- neigh.count + 1 # if the individual's type is the same as the neigh-th  
}end for neigh
```

Where v_dist is the vector of distances. I'm wondering if anyone had tips on how to improve the efficiency of this.

Any general tips for increasing efficiency would also be appreciated!



feiyuan21 commented on Apr 9

Loops are generally very slow I think, you should just try filtering out all the vectors of the particular type you're looking at and counting how many entries you're left with.



zphang commented on Apr 9

It seems like you're sorting your vector every time you iterate within the loop - that's probably eating up a lot of speed. A simple fix would be to sort it before the for-loop.

Measuring Success

- Having concrete objectives made it easier for me to judge the success of the course.
- Midterm review.
- "Success" on homework.
- Questions and sentiment on forum posts.