

Date: 2021/01/29

In this WPI System Dynamics Peer Tutoring Session, we welcomed new attendees from around the world! If you are new to SD and want to network in real time, these sessions are a great starting point. Our next Peer Tutoring Session will be on Friday, Feb 26th 3PM – 4PM ET (Boston time).

Below are my notes. Please let me know if I made any errors or if you have anything to add. I didn't completely follow/understand the conversation on the fractal set.

Question: Is it possible for the SD Society to prepare reviewers for non-System Dynamics journals? I think an effort could be made by specialists in systems dynamics to be reviewers in journals.

A: We are not aware of formal workshops or other trainings like this and have not heard of any programs in other professional societies that do this. Many people in the SD Society are experts in an application area (e.g. business, economics, etc.) and review for journals in their domain/application area.

Question: Where can I find courses on system dynamics?

A:

- <https://systemdynamics.org/online-courses-catalog/>
- <http://www.clexchange.org/>
- WPI Online Grad courses. See the Reminders and Requests section of <https://bit.ly/SDigest2021-01-24>
 - SD 550 with Prof. Pavlov, SD 557, and SD 562 started Jan 28th
 - SD 550 with Prof. Radzicki starts on April 15th

Question: What have others done at the intersection of data science and system dynamics?

A: Some examples <https://proceedings.systemdynamics.org/2020/index.html>

- Schoenberg, William* Inferring Causality in Feedback Systems by Combining Neural Nets and Ordinary Differential Equations
- Zhao, Wang* with Susan Howick and John Quigley Is Observed Data Adequate to Automate the Construction of Causal Models?

- Wallis, Lyle* with Mark Paich Artificial Intelligence and Simulation
- Tellioglu, Nefel* with Yaman Barlas Automated Discovery of Polarity from Data in System Dynamics Context

Questions: I have a few conceptualization questions. We usually hear that a variable could be stock or flow depending on the concept being modeled. In support of this idea, people usually give the example of distance, velocity, and acceleration.

1. Is there any formal reference to this example?
 - a. Dr. Diana Fisher's books for K-12 educators?
2. Is there any other example in support of this conceptualization idea?
 - a. Not sure.

Question: Are there other SD groups that I can join?

A:

- <https://systemdynamics.org/chapters/>
- <https://systemdynamics.org/society-sigs/>

The following questions are specific to isee systems' software

Question: What other resources (e.g. courses, user groups) are there for Stella users?

A:

- <https://groups.io/g/StellaUsersNetwork>
- <https://blog.iseesystems.com/>

Question: How do I export the equations (to communicate with mathematicians, etc.) in my model?

A: Model -> Equation Viewer

Question: How can I calculate a fractal coefficient/set (e.g. Mandelbrot Set <https://mathworld.wolfram.com/MandelbrotSet.html>) in my simulation model?

A:

- Run the model from the command line, export data and calculate the fractals in R/Python/etc. then import the values into the simulation run
- See <https://blog.iseesystems.com/?s=command+line> for tips
- **Side notes:**
 - Currently there is no way to use macros to output two or more values. You can create macros within Stella using converters to calculate a value, but this person needed multiple values.
 - There was also some discussion on using time as the iterative value and operations across arrays which I didn't understand...