

Welcome to Discrete Structures!

Marcus Hughes

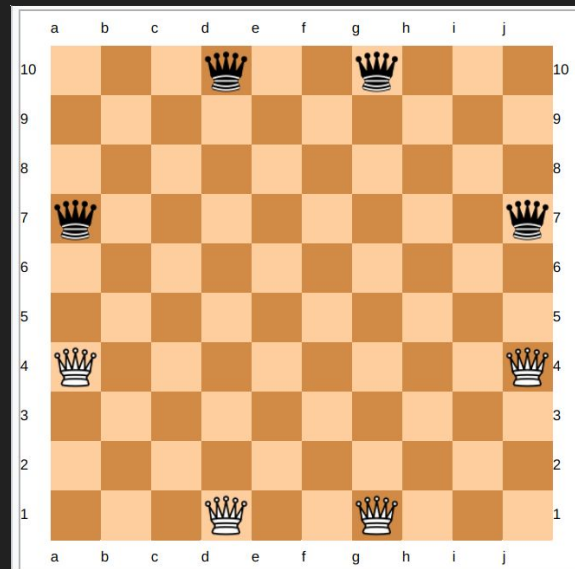
CSCI 2824

3 June 2019: Lecture 1



El Juego de las Amazonas (Game of the Amazons)

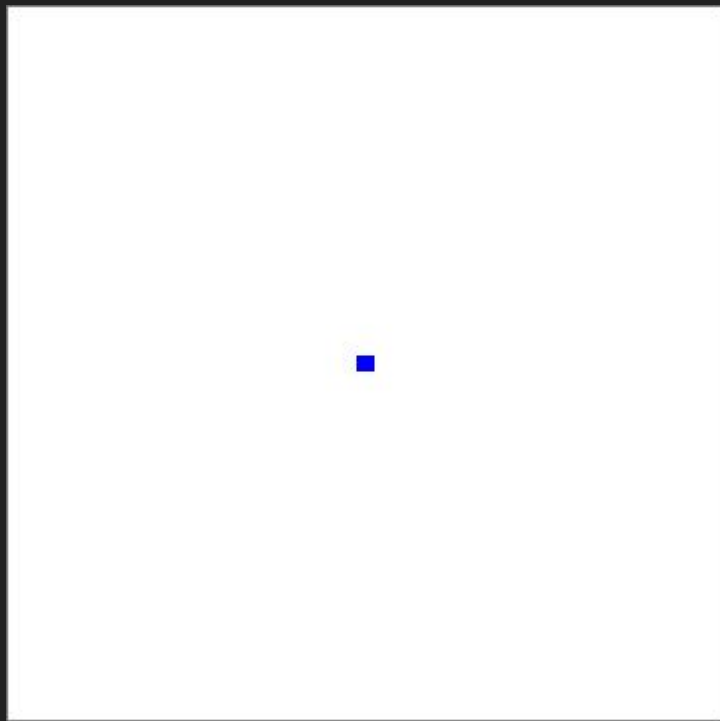
1. Say hello to your opponent (whoever is sitting next to you).
2. Gameplay is simple.
 - a. Pick who starts starts.
 - b. **Amazons move like a chess queen**. Any direction for as far as she wants, but she cannot jump over pieces.
 - c. **Amazon fires a dart** (in the same way she moves) and that square is no longer active. No one can move on it or jump over it.
3. Alternate until someone cannot move.
4. The last player who moves wins.



https://en.wikipedia.org/wiki/Game_of_the_Amazons

What is discrete math?

- What does it mean for something to be discrete?
- Foundation of computer science!
- Topics:
 - Logic
 - Proofs
 - Set theory
 - Recursion
 - Combinatorics
 - Discrete Probability
 - Graphs and trees!



https://en.wikipedia.org/wiki/Ulam%E2%80%99s_Warburton_automaton#/media/File:Ulam-Warbuton_cellular_automaton.gif

Who am I? Call me Marcus.



https://www.tripadvisor.com/Tourism-g39626-Marion_Kentucky-Vacations.html



<http://www.marionkentucky.org/directions/>



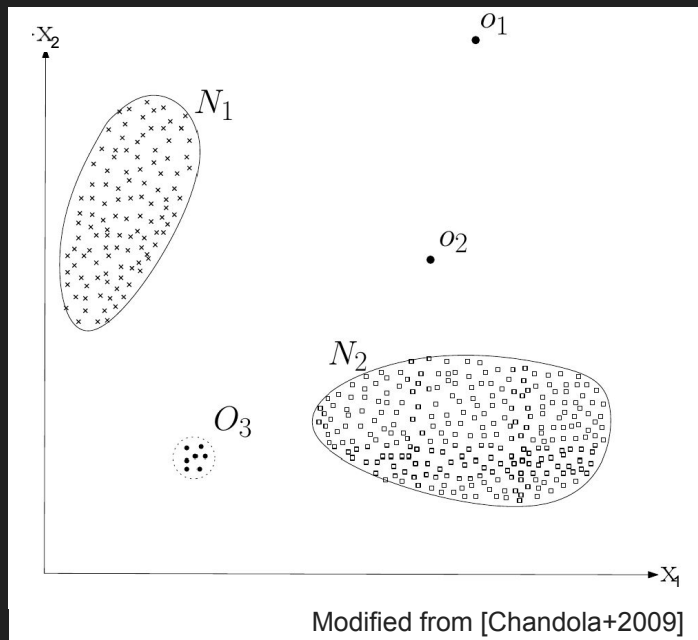
Gatton Academy

<https://www.wku.edu/news/articles/index.php?view=article&articleid=6229>

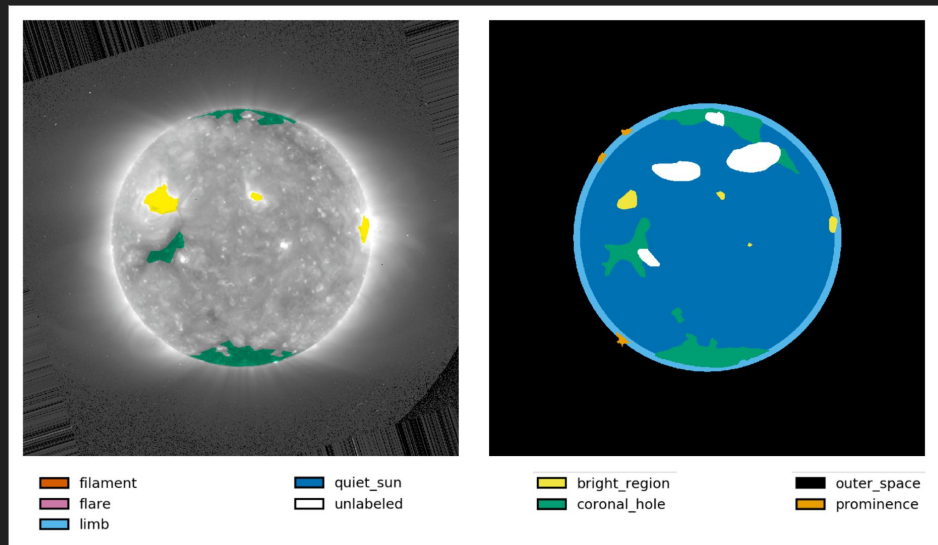


<https://www.ussportscamps.com/fieldhockey/nike/williams-college-nike-field-hockey-camp>

Who am I? Call me Marcus.



Anomaly Detection



Solar Data

Class Policies

- Textbook
- Coursework
- Grades
- Conduct
- Schedule
- Resources

Philosophy



<https://youtu.be/51PYtvNhiM0>

Philosophy



FIXED MINDSET

- > Success comes from talent.
- > I'm either smart or dumb.
- > I don't like challenges.
- > Failure means I can't do it.
- > Feedback is a personal attack.
- > If you succeed, I feel threatened.
- > If something's too hard I give up.



GROWTH MINDSET

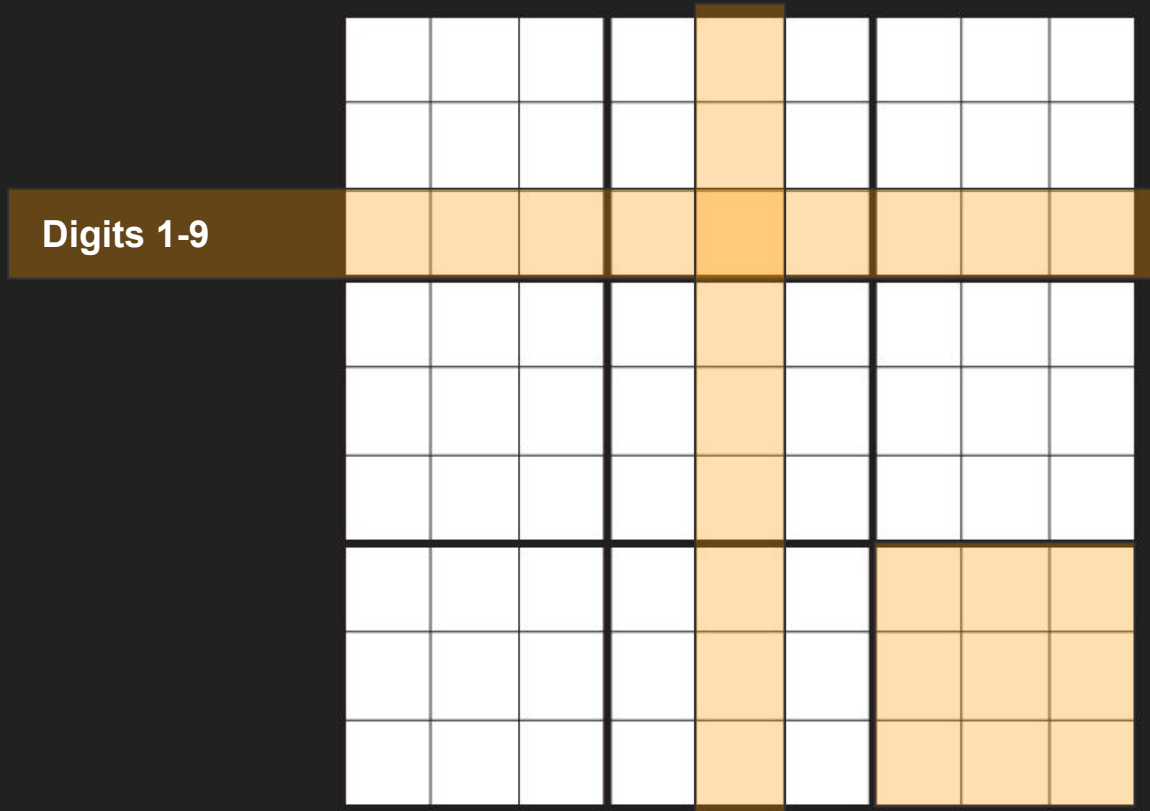
- > Success comes from effort.
- > I can grow my intelligence.
- > I embrace challenges as a chance to grow.
- > Failure means I'm learning.
- > Feedback helps me grow.
- > If you succeed, I'm inspired.
- > I keep trying even when I'm frustrated.

Propositional Logic

Sudoku as Constraint Satisfaction

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

Sudoku as Constraint Satisfaction



Sudoku as Constraint Satisfaction

Digits 1-9	5	3			7			
	6			1	9	5		
		9	8				6	
	8				6			3
	4			8		3		1
	7				2			6
		6					2	8
				4	1	9		5
					8		7	9

feedback.jmbhughes.com

What did you like? What did you not like?