



Brief Introduction to Computer Science @ MVNU

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What is computer science?

- Principles
- Theories
- Algorithms
- Practices



Involving

- Design
- Development
- Implementation

Computer Systems



Practically ...

- 🖥 How do computers work?
- 🖥 How does the software on a computer work?
- 🖥 How can computers be used to solve problems?
- 🖥 How can computers process and change information quickly and accurately?

Programming Languages

```
mirror_mod = modifier_ob.  
#set mirror object to mirror  
mirror_mod.mirror_object =
```

```
operation = "MIRROR_X":  
mirror_mod.use_x = True  
mirror_mod.use_y = False  
mirror_mod.use_z = False  
operation = "MIRROR_Y":  
mirror_mod.use_x = False  
mirror_mod.use_y = True  
mirror_mod.use_z = False  
operation = "MIRROR_Z":  
mirror_mod.use_x = False  
mirror_mod.use_y = False  
mirror_mod.use_z = True
```

```
#selection at the end -add  
mirror_ob.select= 1  
modifier_ob.select=1  
context.scene.objects.active  
= ("Selected" + str(modifier_ob.name))  
mirror_ob.select = 0  
= bpy.context.selected_objects[0]  
data.objects[one.name].select  
print("please select exactly one mirror")
```

--- OPERATOR CLASSES ---

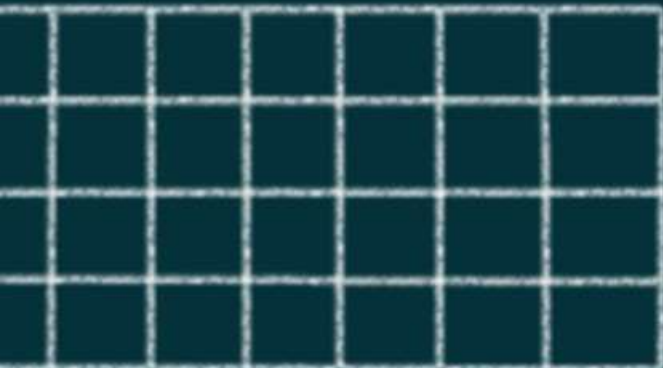
```
types.Operator):  
    def execute(self, context):  
        #set X mirror to the selected  
        object.mirror_mirror_x"  
        "Mirror X"
```

```
context):  
    if context.active_object is not None:
```


any shortest-length paths are
get from your house to the
ut shop?



$$\binom{n}{k} = \frac{n!}{(n-k)!k!}$$



1 0 1

$$e^{i\pi} + 1 = 0$$

1 0 1 \mathbb{B}_6

1 0 1 0 0 0 1 0 1

\mathbb{B}_9



One-to-One

P	Q	R	P V Q	P V R	(P V Q) \wedge (P V R)
T	T	T	T	T	T
T	T	F	T	T	T
T	F	T	T	T	T
T	F	F	T	T	T
F	T	T	T	T	T
F	T	F	T	F	F
F	F	T	F	T	F
F	F	F	F	F	F

Find $7 + 12 + 17 + 22 + \dots + 342$.

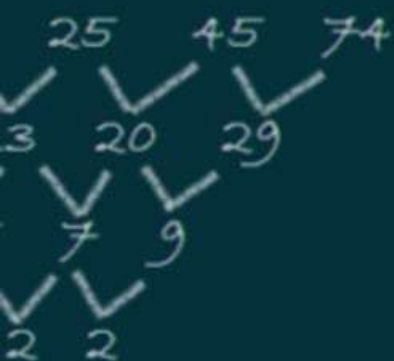
$$S_n = 7 + 12 + 17 + 22 + \dots + 342$$

$$+ S_n = 342 + 337 + 332 + 327 + \dots + 7$$

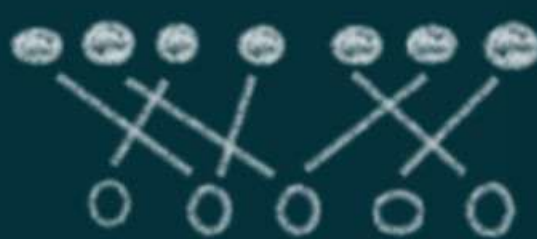
$$2S_n = 349 + 349 + 349 + 349 + \dots + 349$$

$$2S_n = 349 \cdot 68$$

$$S_n = 11866$$



Onto

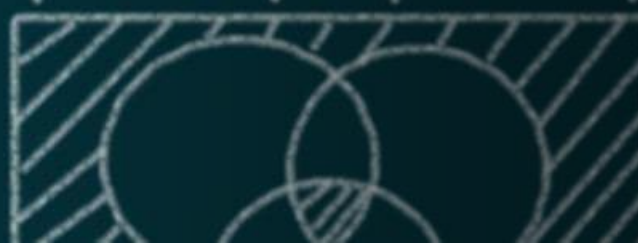


Algorithms

There are six dogs to give 13 tacos.
rs and bars' diagram to illustrate the first
dog get 3 tacos, the second dog gets none,
dog gets 5 and the fourth dog gets one.



$$(A \cup B \cup C) \cup (A \cap B \cap C)$$



$$v - e + f = 2$$

Converse:

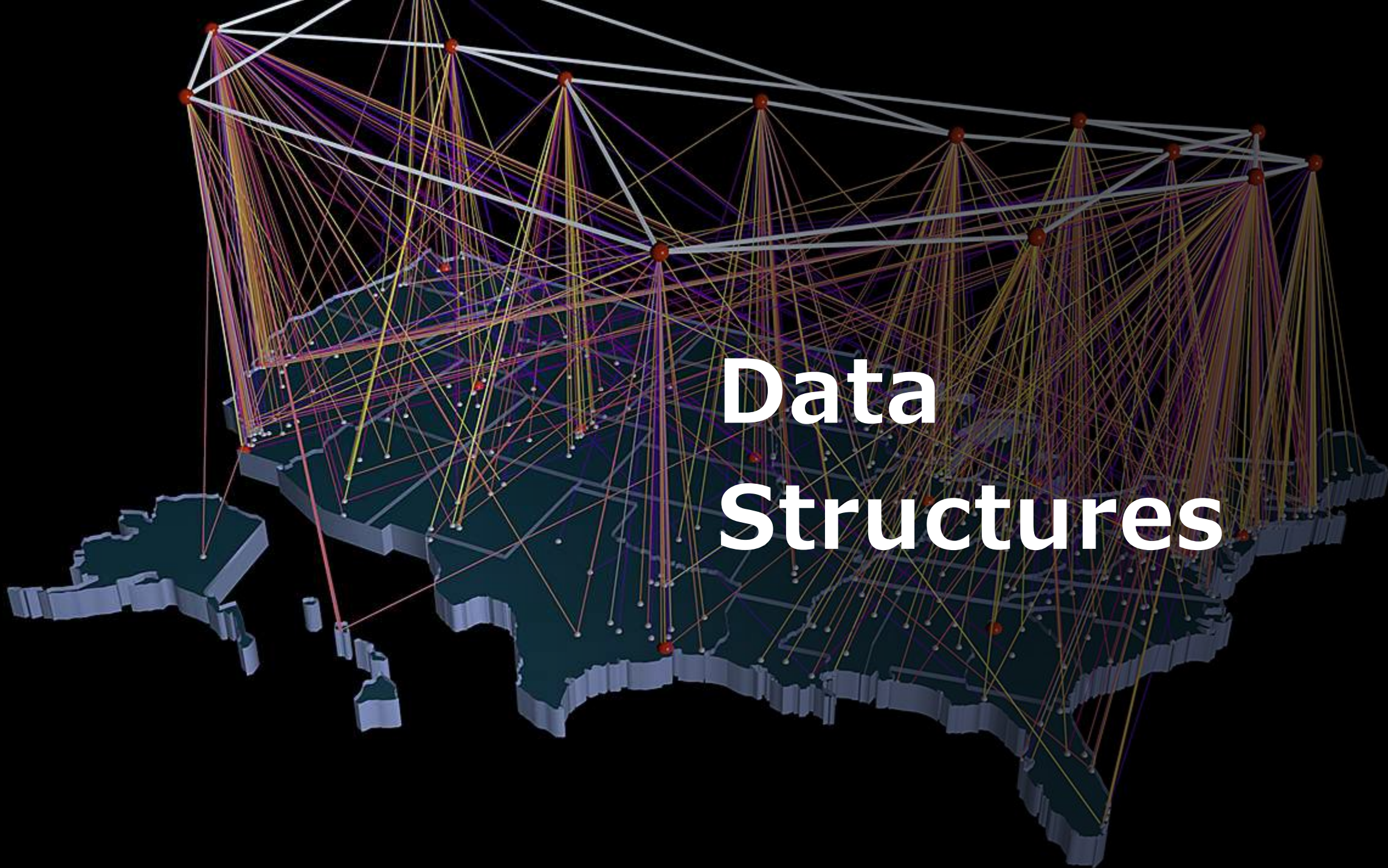
$$\exists x \forall y (x \geq 2y \rightarrow x \leq y + 1)$$

Negation:

$$\neg [\exists x \forall y (\neg (x \geq 2y) \vee x \leq y + 1)]$$

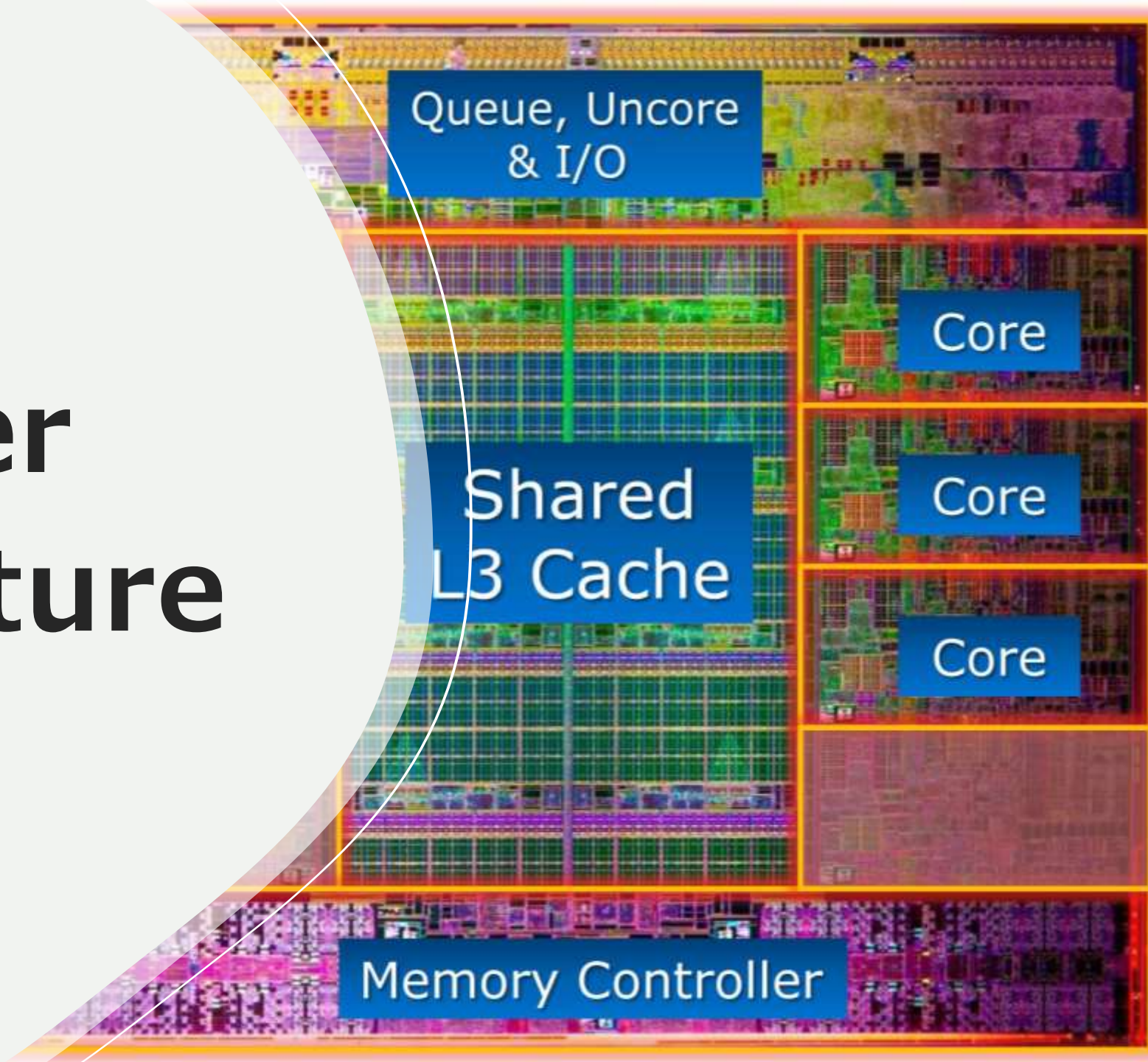
Contrapositive:

$$\exists x \forall y (x \leq y + 1 \rightarrow x \geq 2y)$$



Data Structures

Computer Architecture





Operating Systems

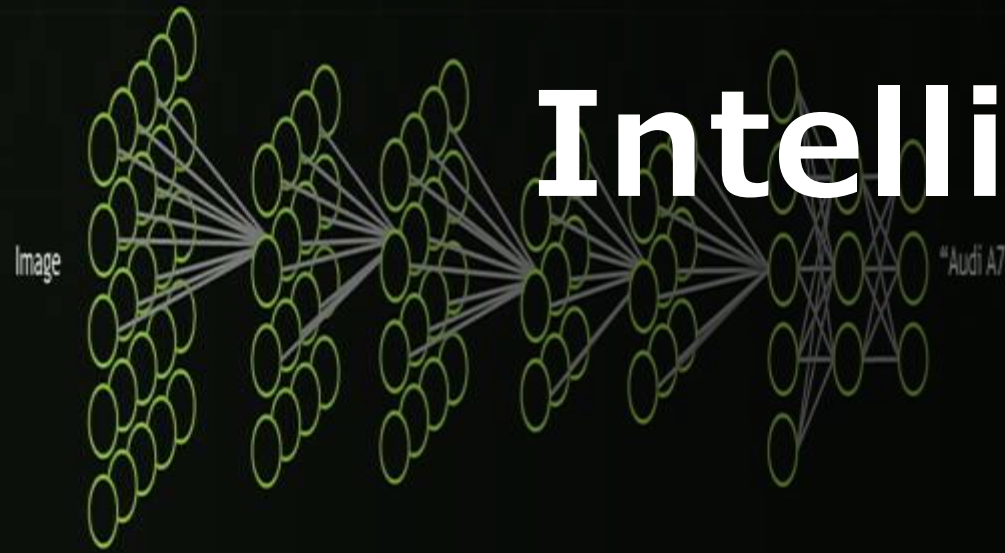


Software Development

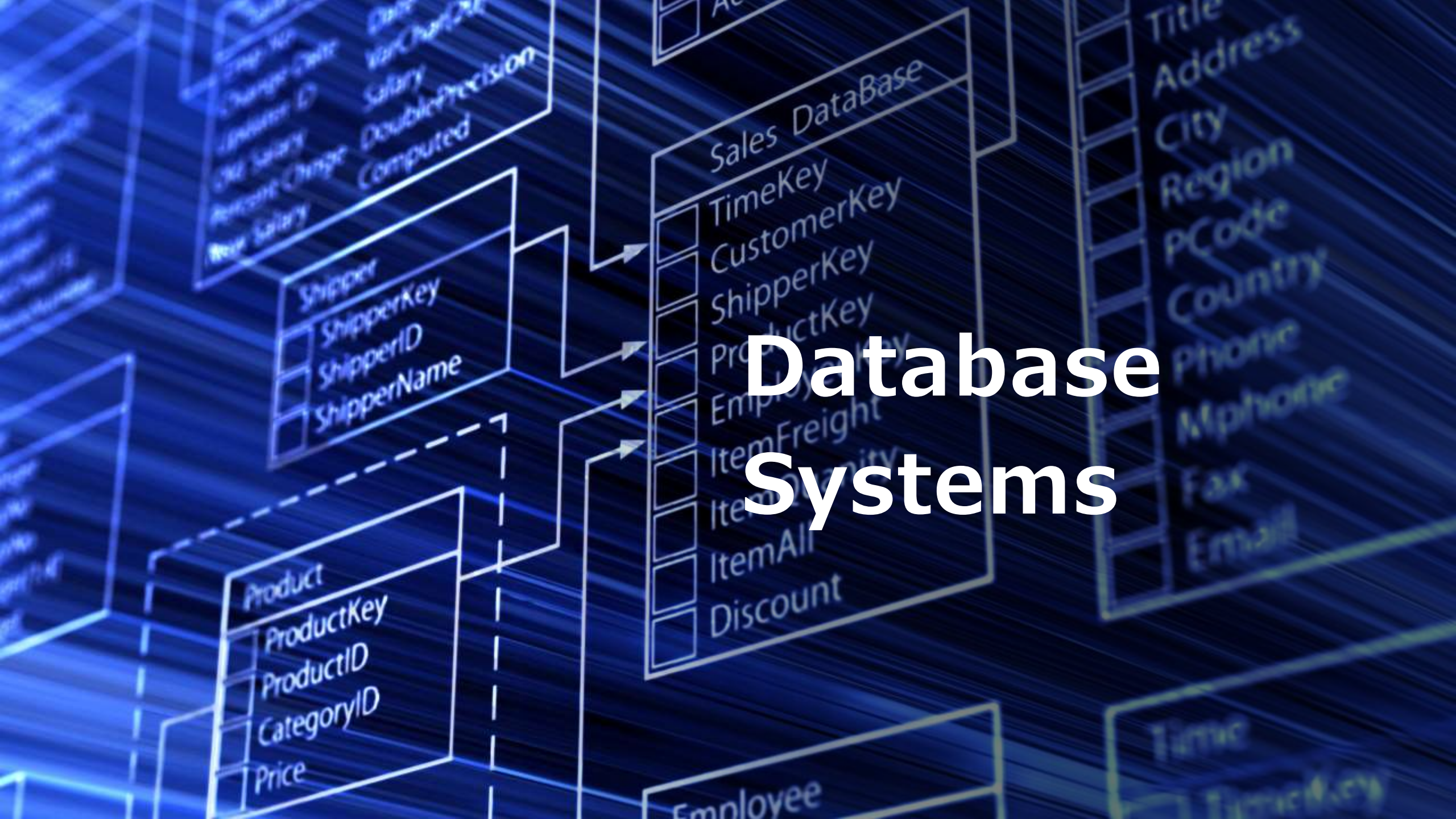
HOW A DEEP NEURAL NETWORK SEES



Artificial Intelligence



Database Systems





Networks

HCI and more





Tasks

Analyzing problems (Problem Solving)

Tasks

Designing Efficient and
Reliable Solutions





Tasks

Implementing solutions using programming languages and tools



Industries

Software Development



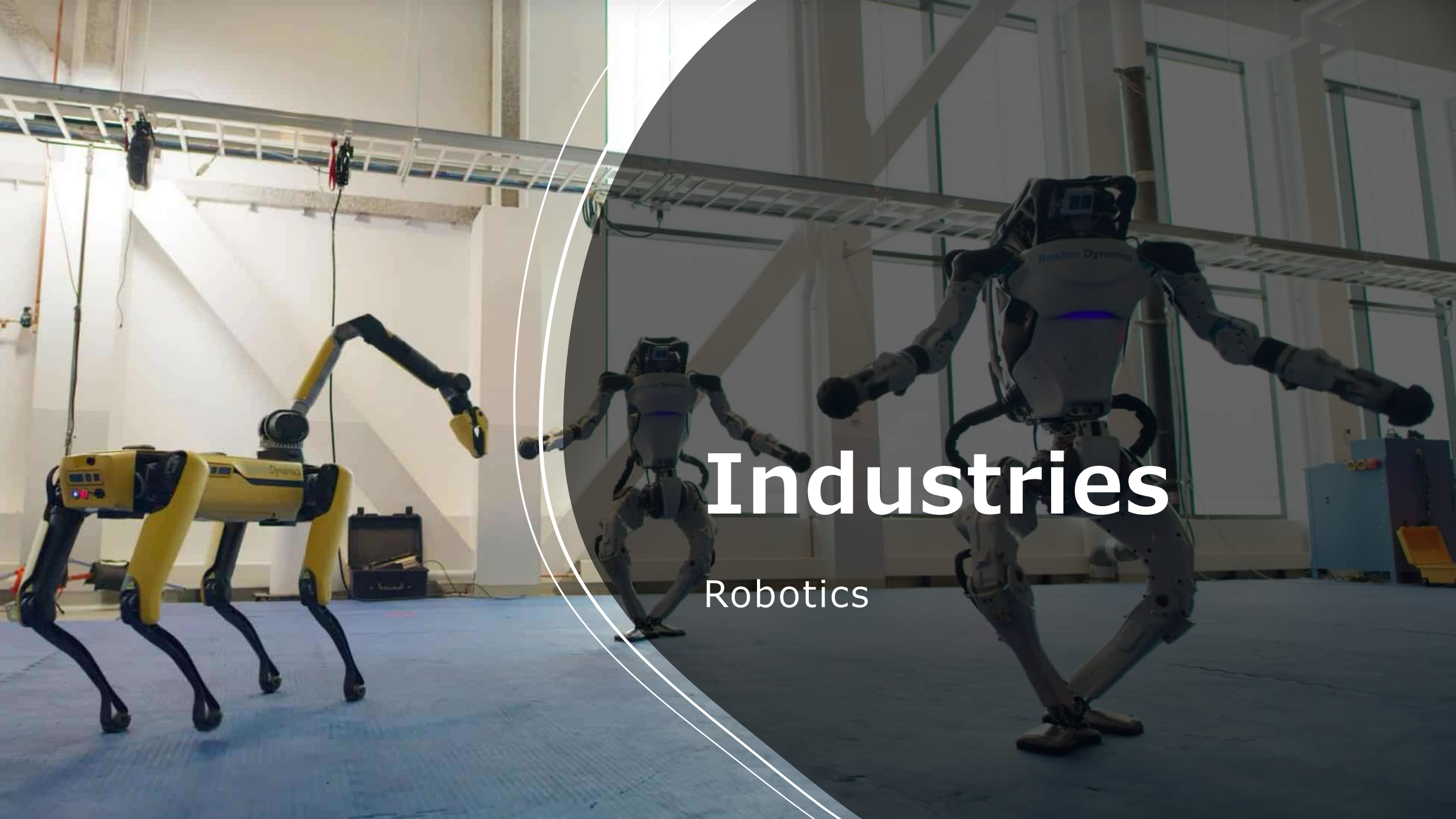
Industries

Cybersecurity

Industries

Data analysis





Industries

Robotics

Input variables Output variable

X_1	X_2	X_3	X_4	X_5	Y
0.1	5.2	2.1	0.2	2.9	A
0.2	4.9	1.9	0.1	3.1	A
5.1	4.8	1.9	1.2	6.1	B



Exploratory Data Analysis



Data cleaning



Data curation



Remove redundant features



Pre-processed Data

Machine Learning

Data splitting



80%

use as Training set



Learning algorithms

- SVM
- DL
- GBM
- RF
- DT
- KNN

Hyperparameter



20%

use as Test set



To Summarize, CS has:

A vital role in the modern
world

Is driving tech

Is enabling innovations

CS at MVNU since 1973



Three CS Programs at MVNU

Computer Science with
Mathematics Minor

- Software Engineer
- Software Developer
- Software Analyst / Tester
- Web/App/Database Developer



Three CS Programs at MVNU

Computer Science and pick your own minor program of study (ministry, business, accounting, exercise science, etc.)

- Software Engineer
- Software Developer
- Software Analyst / Tester
- Web/App/Database Developer

Three CS Programs at MVNU

Computer Systems and Network Engineering
(CSNE) for Information Technology
Professionals

Pick your own minor program of study

- ✧ Network Engineer
- ✧ IT Networking Specialist
- ✧ IT System Administrator
- ✧ Cybersecurity Analyst or DevOps Engineer





Computer Engineering

MVNU also has this related program of study

The best of Electrical Engineering (Digital Focus) and Computer Science

Who does well in CS?

Likes to solve problems



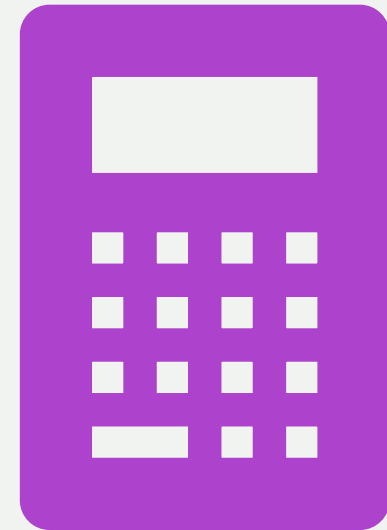
```
graph TD; A[Likes to solve problems] --> B[Can handle multiple layers of abstraction]; B --> C[Build models to explain how things work];
```

Can handle multiple layers of abstraction

Build models to explain how things work

Glassdoor Best Jobs in 2022

1. Enterprise Architect (\$145k), up from #4
2. Full Stack Engineer (\$101k)
3. Data Scientist (\$120k) – still take some CS courses
4. Devops Engineer (up from #5, \$120k)
5. Strategy Manager (\$140k)
6. Machine Learning Engineer (\$130k)
7. Data Engineer (\$113k, usually needs Master's)
8. Software Engineer (up from #9, \$116k)
9. Java Engineer (big drop from #1, \$107k)
11. Back End Engineer (\$112k)
12. Cloud Engineer (\$119k)

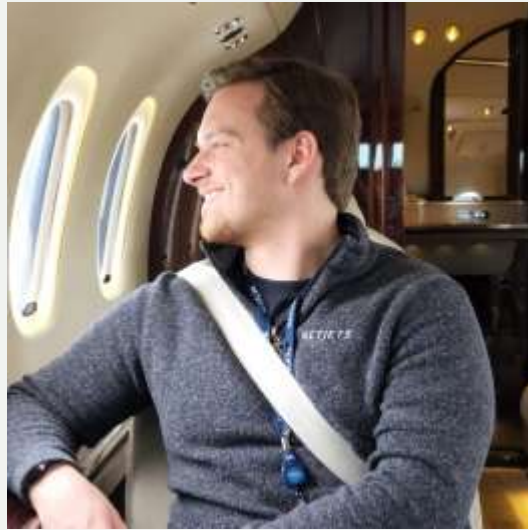




Who's teaches CS?

Recent MVNU CS Graduates





Recent MVNU CS Graduates

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Related Programs

- Computer Engineering (New) [Announcement](#) and [Program](#)

Faculty

- [Dr. Robert Kasper](#), Professor Emeritus of Computer Science
- [Dr. Michael Robbeloth](#), Assistant Professor of Computer Science
- [Dr. Deborah Wilson](#), Assistant Professor of Computer Science

Checklists for Academic Advising

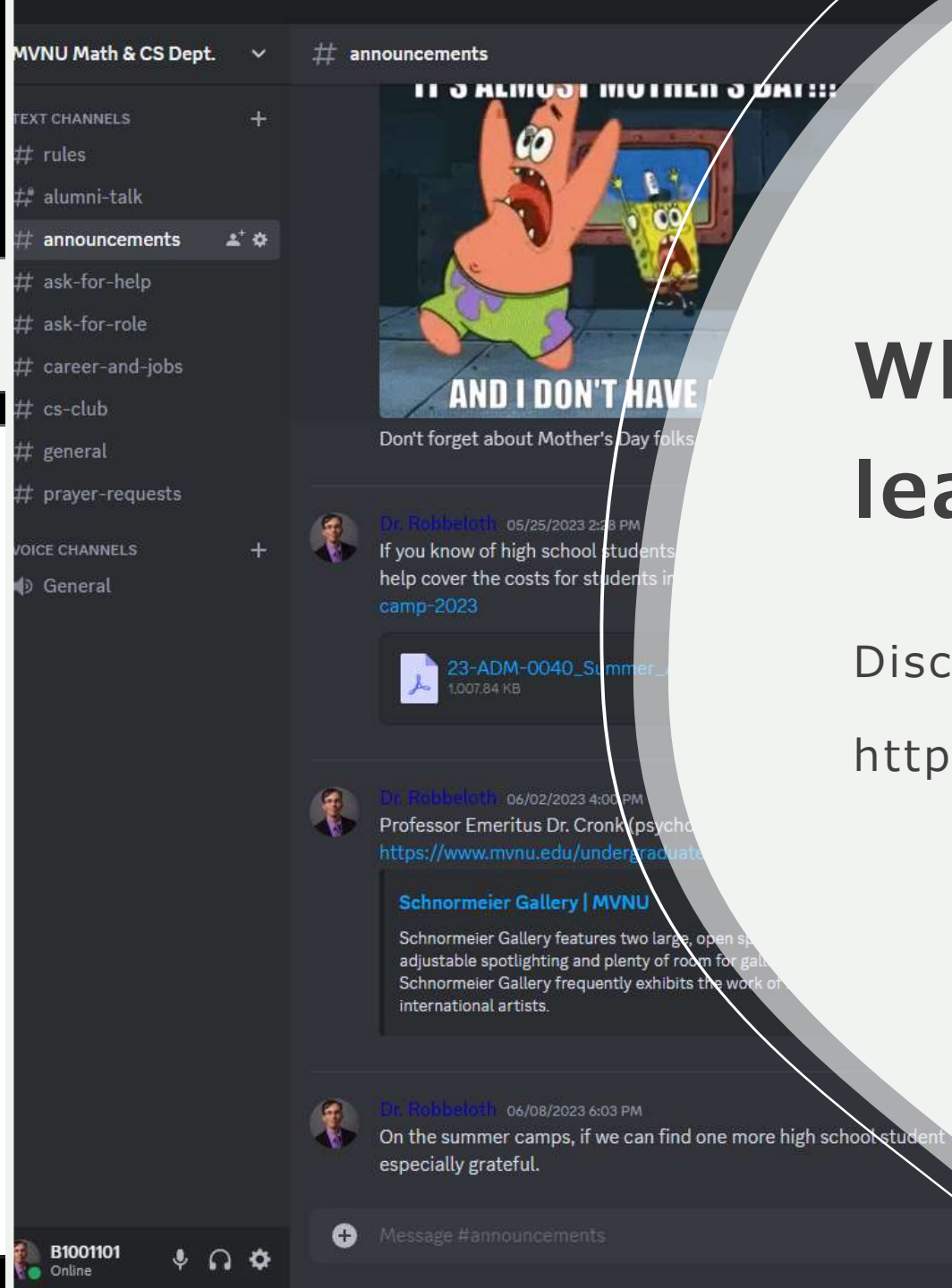
Where can you
learn more?

Website:

<https://cs.mvnu.edu>



SCAN ME



Where can you learn more?

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Questions?