

BEAVER WORKS
Lincoln Laboratory | School of Engineering

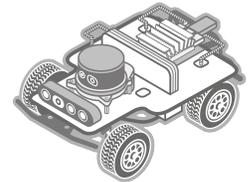


MIT Beaver Works Summer Institute

Spring 2022 Outreach Program – 6 Courses

Yes! You Can Program Autonomous Cars

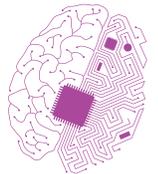
Yes! You Can Hack and Code!



Yes! You Can Design, Build and Fly Model Aircraft

Many Interesting Things for Aspiring Engineers!

Yes! You Can Program Cognitive Assistants!



Yes! You Can Analyze the Building Blocks of Life!

**No Prior
Experience
Required!**

WHO: High School Students (9th and 10th grade)

WHEN: Saturdays 11am-2pm (EST) - March 5, 12, 19, 26,
April 2, 9, 16, 23, 2022 *

WHERE: Virtually, through Zoom!

REGISTER: https://mit-bwsi.formstack.com/forms/bwsi_spring_2022

* Schedule for the "Yes! You Can Analyze the Building Blocks of Life!" course is different (12 sessions on Tuesdays).



Patrick J McGovern
FOUNDATION



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YES! YOU CAN PROGRAM AUTONOMOUS CARS

NO HARDWARE REQUIRED!

A BWSI MINI-RACECAR CRASH COURSE

NO COST!



LEARN TO CODE PYTHON!



NO PRIOR EXPERIENCE REQUIRED!

Who: High School Students (9th and 10th grade) interested learning about coding and robotics! Beginners encouraged!

When: Saturdays 11am-2pm (EST) - March 5, 12, 19, 26, April 2, 9, 16, 23, 2022

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_spring_2022



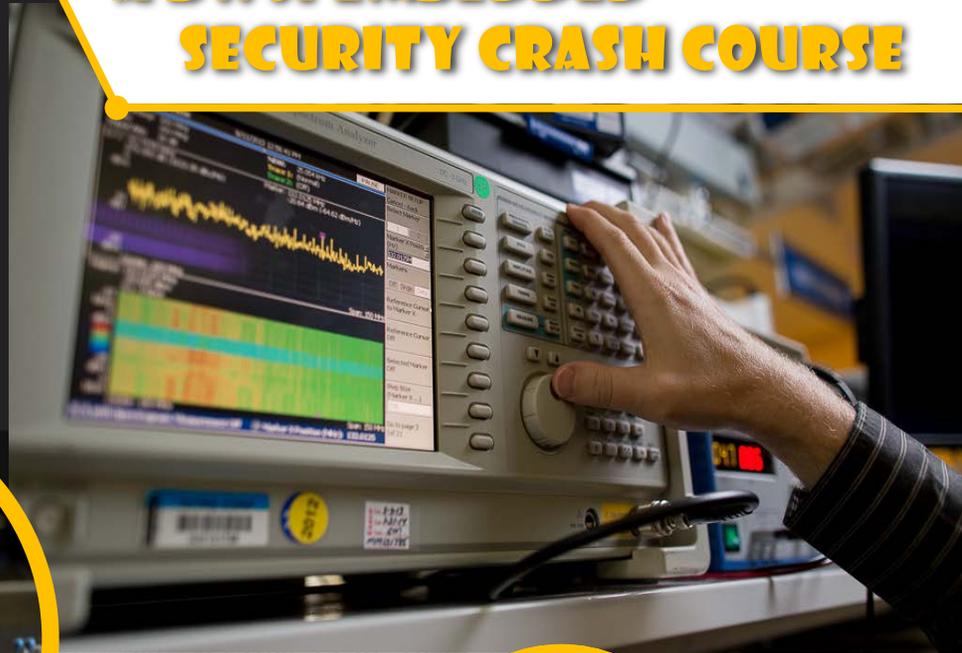


YES! YOU CAN HACK AND CODE!

A BWSI EMBEDDED SECURITY CRASH COURSE

MITRE Project

No Cost!



```
char release_message;
```

```
// get message
```

```
for (int i = 0; i < release_message_length; i++) {
```

```
    release_message[i] = uart_read(UART1, BLOCKING, &read);
```

```
    comboMetadata[54+i] = release_message[i];
```

```
}
```

```
// Create 32 bit word for flash programming, version is at lower
```

```
uint32_t metadata = ((size & 0xFFFF) << 16) | (version & 0xFFFF);
```

```
program_flash(METADATA_BASE, (uint8_t*)&metadata, 4);
```

```
fw_release_message_address = (uint8_t *) (FW_BASE + size);
```

```
fw_release_message[0] = metadata;
```

```
fw_release_message[4] = metadata;
```

```
fw_release_message[8] = metadata;
```

```
fw_release_message[12] = metadata;
```

```
fw_release_message[16] = metadata;
```

```
fw_release_message[20] = metadata;
```

```
fw_release_message[24] = metadata;
```

```
fw_release_message[28] = metadata;
```

```
fw_release_message[32] = metadata;
```

```
fw_release_message[36] = metadata;
```

```
fw_release_message[40] = metadata;
```

```
fw_release_message[44] = metadata;
```

```
fw_release_message[48] = metadata;
```

```
fw_release_message[52] = metadata;
```

```
fw_release_message[56] = metadata;
```

```
fw_release_message[60] = metadata;
```

```
fw_release_message[64] = metadata;
```

```
fw_release_message[68] = metadata;
```

```
fw_release_message[72] = metadata;
```

```
fw_release_message[76] = metadata;
```

```
fw_release_message[80] = metadata;
```

```
fw_release_message[84] = metadata;
```

```
fw_release_message[88] = metadata;
```

```
fw_release_message[92] = metadata;
```

```
fw_release_message[96] = metadata;
```

```
fw_release_message[100] = metadata;
```

```
fw_release_message[104] = metadata;
```

```
fw_release_message[108] = metadata;
```

```
fw_release_message[112] = metadata;
```

```
fw_release_message[116] = metadata;
```

```
fw_release_message[120] = metadata;
```

```
fw_release_message[124] = metadata;
```

```
fw_release_message[128] = metadata;
```

```
fw_release_message[132] = metadata;
```

```
fw_release_message[136] = metadata;
```

```
fw_release_message[140] = metadata;
```

```
fw_release_message[144] = metadata;
```

```
fw_release_message[148] = metadata;
```

```
fw_release_message[152] = metadata;
```



LEARN TO CODE PYTHON!

NO PRIOR EXPERIENCE REQUIRED!

Who: High School Students (9th and 10th grade) interested in learning about code and hacking! Beginners encouraged!

When: Saturdays 11am-2pm (EST) - March 5, 12, 19, 26, April 2, 9, 16, 23, 2022

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsι.formstack.com/forms/bwsι_spring_2022





Yes! You Can Design, Build and Fly Model Aircraft!



**Design
Build
Fly
Crash
Rebuild**



A
BWSI
(Beaver Works
Summer Institute)
Course

Introduction to RC Model Aircraft Design

No Prior Experience Required!

Who: High School Students (9th and 10th grade) interested in Aerospace and Aeronautics.

When: Saturdays 11am-2pm (EST) - March 5, 12, 19, 26, April 2, 9, 16, 23, 2022

Where: Virtually, through Zoom!

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Many Interesting Things:

For Aspiring Engineers
From Transistors to Data Science

A BWSI Medlytics intro course by Christian Cardozo

An early introduction to the technologies that shape our world,
with applications to medical data analytics!

Python • Computer Architecture • Machine Learning
Computer Vision • Linux • The Internet

No prerequisites.
No pressure.

**NO PRIOR
EXPERIENCE
REQUIRED!**

WHO: High School Students (9th and 10th grade) interested in learning about computers, coding and medical data analytics. Beginners Encouraged!

WHEN: Saturdays 11am-2pm (EST)-March 5, 12, 19, 26, April 3, 9, 16, 23, 2022

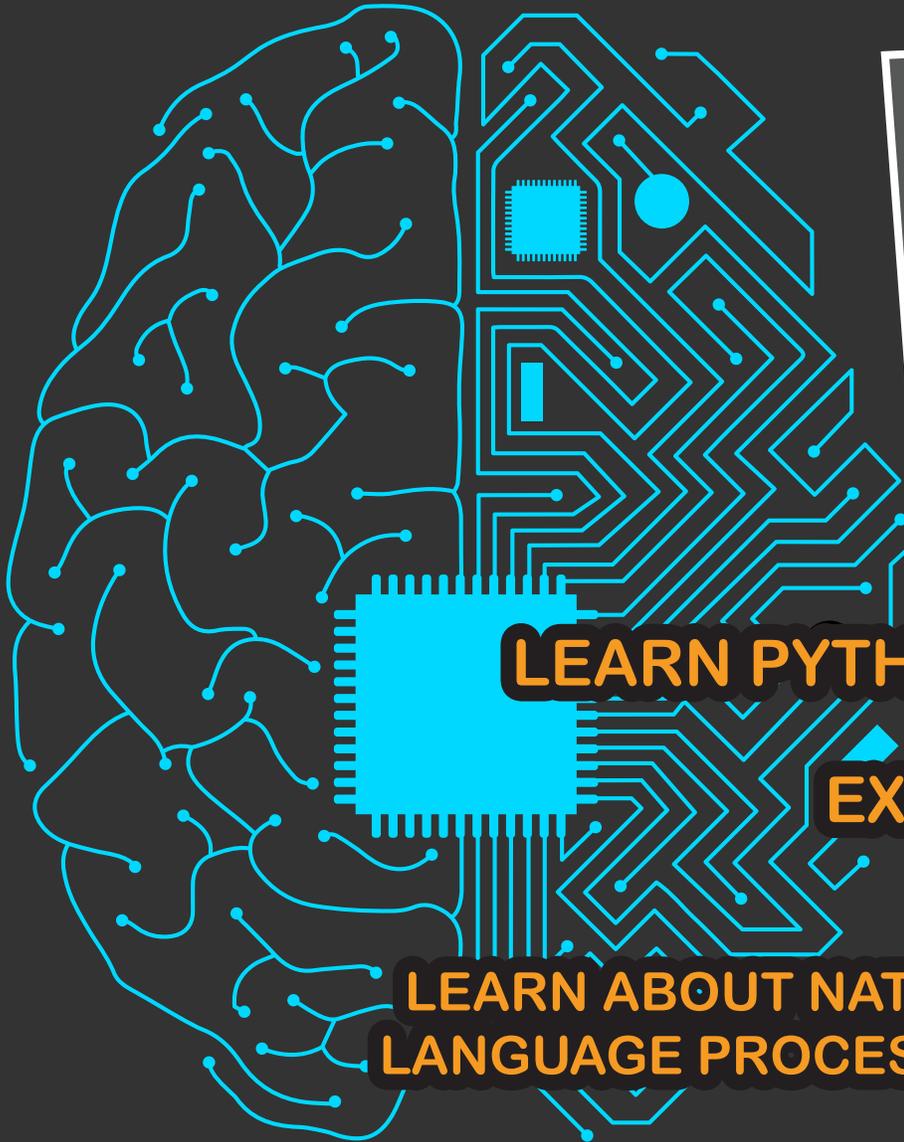
WHERE: Virtually, through Zoom!

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Yes! You Can Program Cognitive Assistants! — a BWSI crash course



An introduction to artificial intelligence through building an autonomous cognitive assistant!

LEARN PYTHON!

EXPLORE MACHINE LEARNING!

LEARN ABOUT NATURAL LANGUAGE PROCESSING!

No Prior Experience Required!

Who: High School Students (9th and 10th grade) interested in learning about code and artificial intelligence! Beginners Encouraged!

When: Saturdays 11am-2pm (EST)-March 5, 12, 19, 26, April 3, 9, 16, 23, 2022

Where: Virtually, through Zoom!

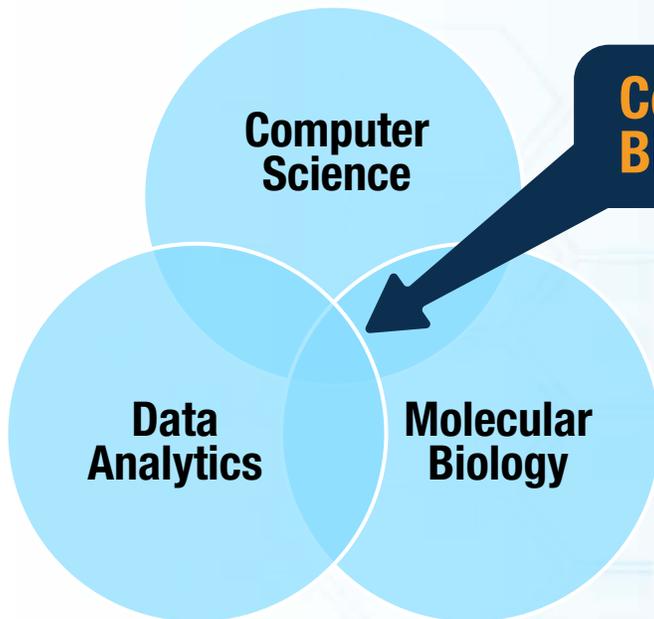
Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_spring_2022





Yes! **You** can analyze the building blocks of life! Computational Biology And The Microbiome

MITRE – Lincoln Laboratory Project



The future of bio is now! Join us this spring for BWSI's *Computational Biology and the Microbiome* course — co-developed by MITRE and MIT Lincoln Laboratory. Learn about fundamental computational biology concepts like genomics, programming, data visualization, and digital biosecurity in a fun, low stress environment.

**No
Prior
Experience
Required!**

Who: High School Students (9th and 10th grade) interested in computational biology and the microbiome! Beginners encouraged!

When: 12 sessions from March 4th to May 26th, 2022. Asynchronous weekly modules (recorded lectures, notes, assignments), Office-hours on Tuesdays at 4pm EST.

Where: Virtually, through Zoom for office-hours.

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_spring_2022

