



BEAVER WORKS
Lincoln Laboratory | School of Engineering



MIT Beaver Works Summer Institute

Fall 2021 Outreach Program – 7 Courses

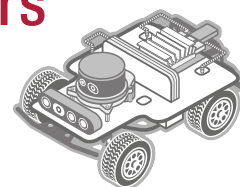
Girls Who Program Autonomous Cars

Girls Who Hack and Code

Girls Who Design, Build and Fly Model Aircraft

Girls Who Want to Learn Many Interesting Things

Girls Who Program Cognitive Assistants



Girls Who Program Autonomous Cars – BWSI-Pacific

**Kwaj Mini-RACECAR Middle School
(Kwajalein Atoll, Marshall Islands)**

**No Prior
Experience
Required!**

WHO: High School 11th Grade Female Students *

WHEN: Saturdays 11am-2pm (EST): October 16, 23, 30,
November 6, 13, 20, December 4, 11, 2021

WHERE: Virtually, through Zoom!

REGISTER: https://mit-bwsi.formstack.com/forms/bwsi_fall2021

* While all BWSI programs are open to eligible students of any gender identity this fall program is designed to encourage and support female students in STEM.



Patrick J McGovern
FOUNDATION



School of Engineering



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GIRLS WHO PROGRAM AUTONOMOUS CARS

A BWSI MINI-RACECAR CRASH COURSE

RACING
ROBOTS!



No Cost!



LEARN TO CODE
PYTHON!

NO HARDWARE
REQUIRED!



**NO PRIOR
EXPERIENCE
REQUIRED!**

Who: Female High School Juniors interested learning about code and robots! Beginners encouraged!

When: Saturdays 11am to 2pm (EST) – 10/16, 10/23, 10/30, 11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_fall2021





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GIRLS WHO HACK CODE!

MITRE Project

A BWSI EMBEDDED
SECURITY CRASH COURSE

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);
```

```
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);
```



**LEARN TO CODE
PYTHON!**

**NO PRIOR
EXPERIENCE
REQUIRED!**

Who: Female High School Juniors interested in learning about code and hacking!
Beginners encouraged!

When: Saturdays 11am-2pm (EST) - 10/16, 10/23, 10/30, 11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_fall2021





BEAVER WORKS
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Girls Who Design, Build and Fly Model Aircraft — A BWSI Crash Course.

**Design
Build
Fly
Crash
Rebuild**



Introduction to
RC Model Aircraft Design

**No Prior
Experience
Required!**

Who: Female High School Juniors interested in Aerospace and Aeronautics.

When: Saturdays 11am to 2pm (EST) – 10/16, 10/23, 10/30,
11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_fall2021





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Girls who want to learn

Many Interesting Things:

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!

Computer Architecture • Python
Machine Learning • Computer Vision

No prerequisites.
No pressure.

**NO PRIOR
EXPERIENCE
REQUIRED!**

Who: Female High School Juniors interested learning about computers, coding and medical data analytics. Beginners Encouraged!

When: Saturdays 11am to 2pm (EST) – 10/16, 10/23, 10/30, 11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_fall2021

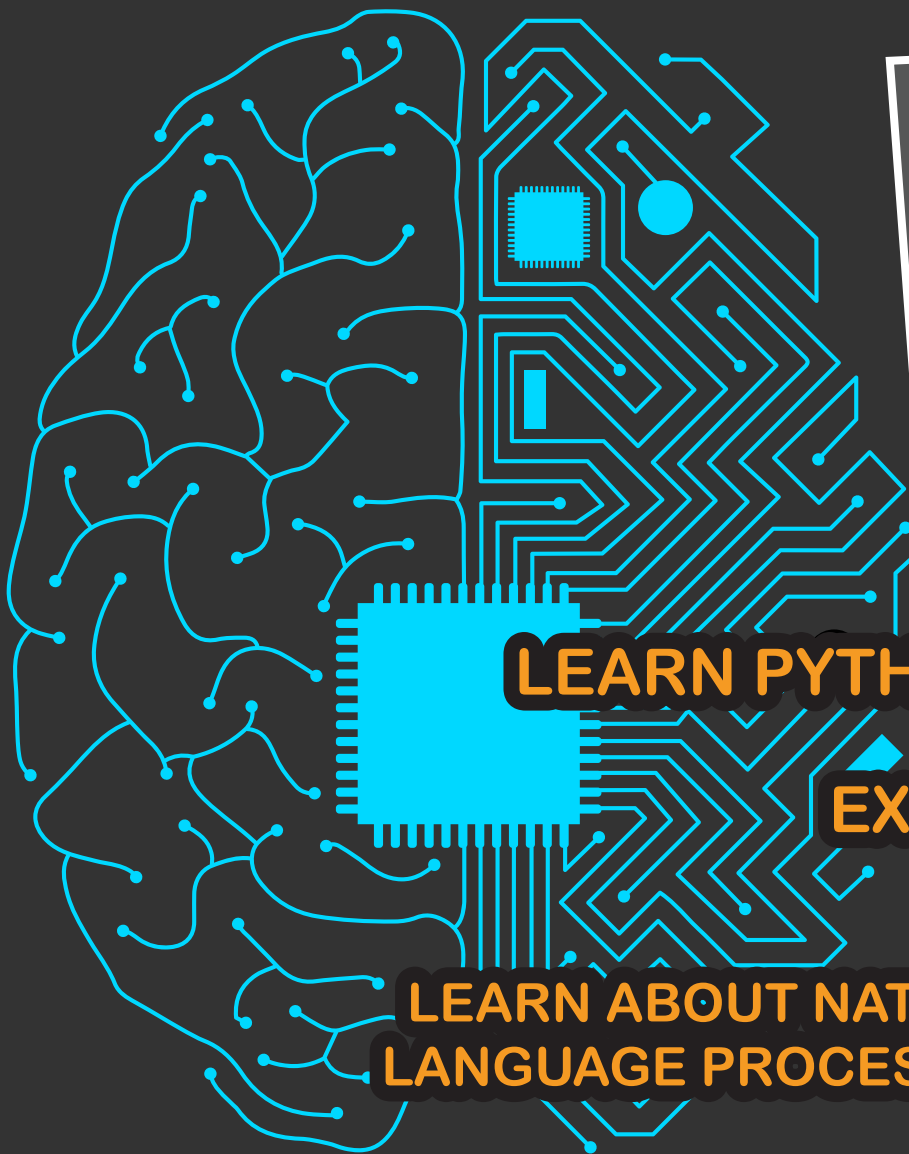




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Girls who program cognitive assistants! — a BWSI crash course



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: Female High School Juniors interested learning about code and artificial intelligence! Beginners Encouraged!

When: Saturdays 11am to 2pm (EST) – 10/16, 10/23, 10/30, 11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_fall2021





GIRLS WHO PROGRAM AUTONOMOUS CARS

A BWSI MINI-RACECAR CRASH COURSE

CONNECT
WITH GIRLS ACROSS
THE PACIFIC!



No Cost!



LEARN TO CODE
PYTHON!



NO HARDWARE
REQUIRED!



NO PRIOR
EXPERIENCE
REQUIRED!

Who: Female High School Juniors interested learning about code and robots! Beginners encouraged!

When: Saturdays 1pm to 4pm (HST) – 10/16, 10/23, 10/30, 11/6, 11/13, 11/20, 12/4, 12/11, 2021

Where: Virtually, through Zoom!

Registration Form: https://mit-bwsi.formstack.com/forms/bwsi_student_kwaj_fall_application_2021





KWAJ MINI-RACECAR MIDDLE SCHOOL

A BWSI MINI-RACECAR CRASH COURSE

RACING ROBOTS!



LEARN TO CODE PYTHON!



NO HARDWARE REQUIRED!



NO PRIOR EXPERIENCE REQUIRED!

Who: Kwaj students in grades 7 – 9. Beginners encouraged!

When: TBD, one afternoon/evening per week beginning late October

Where: Namo Weto Youth Center

Registration Form: *Registration form available at Namo Weto Youth Center*

