

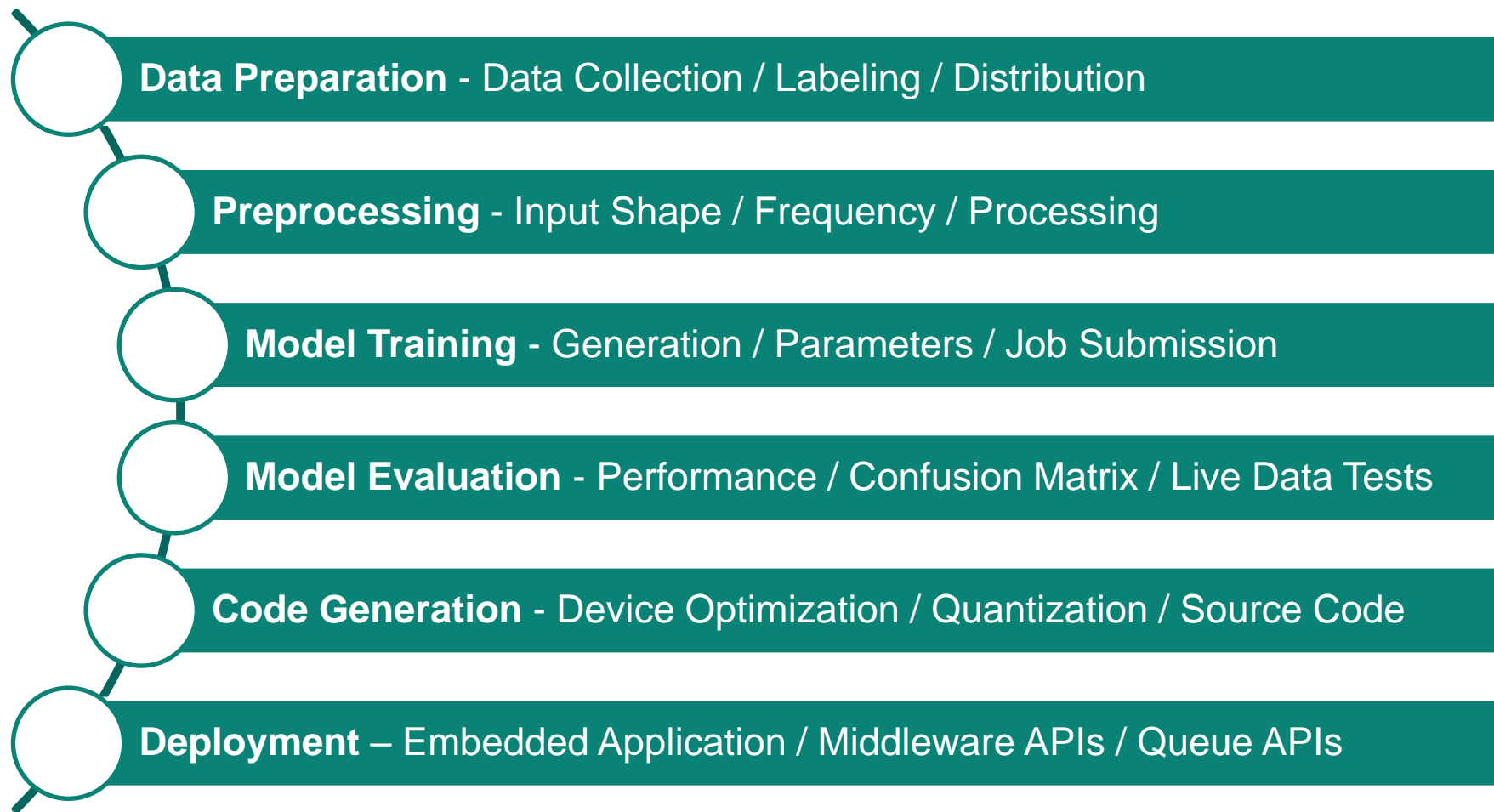
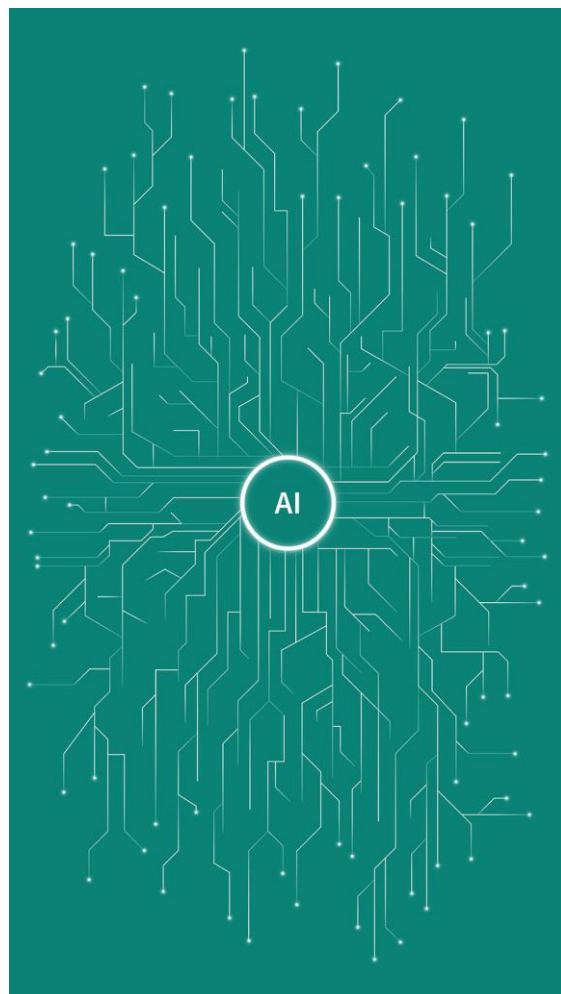


Getting Started with Edge AI model creation using the PSOC™ 6 AI Kit

Clark Jarvis
April 10, 2025



Basic Concepts | Edge AI development flow

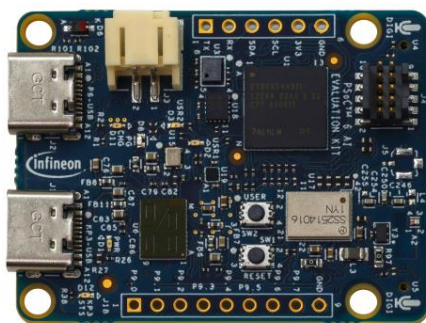


Learn more at <https://developer.imagimob.com>

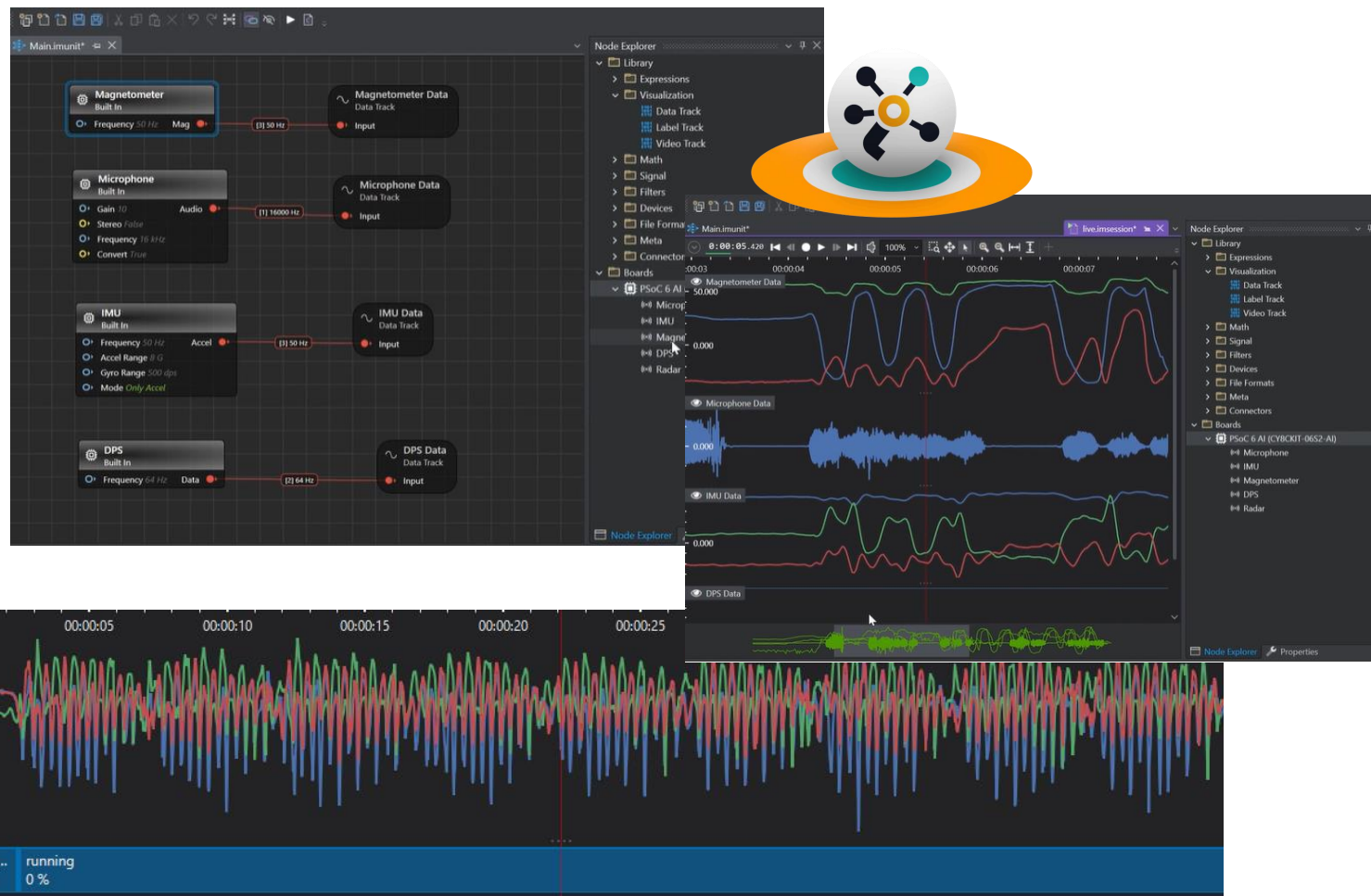
Edge AI | Data Collection and Labeling

USB /
Data Collection

Debug /
Programming



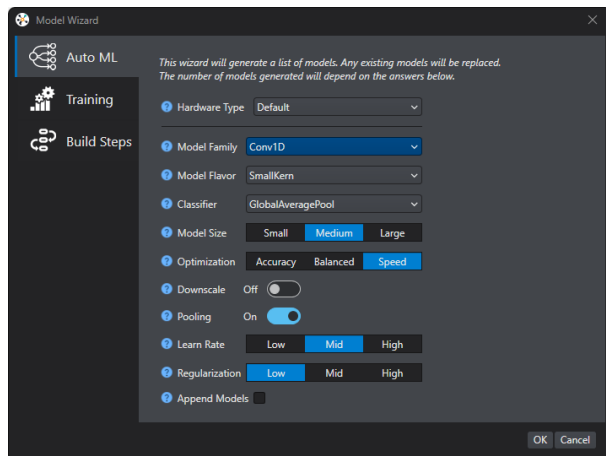
PSOC™ 6 AI Eval Kit
(CY8CKIT-062S2-AI)



DEEPCRAFT™ Studio

Edge AI | Model Creation

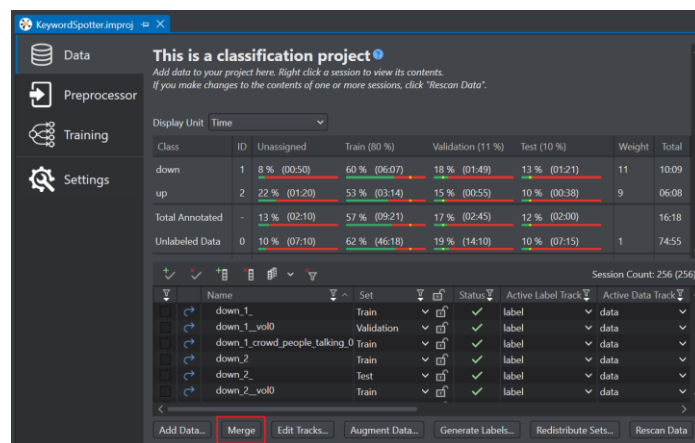
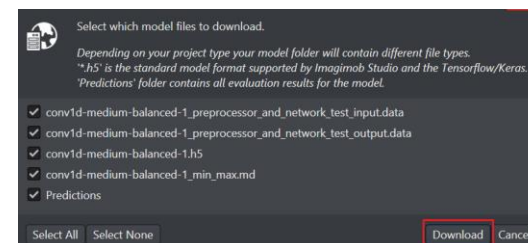
1 Generate Model List



2 Submit job to cloud-based training service



3 Download resulting model into Studio project (.h5)



4 Analyze performance

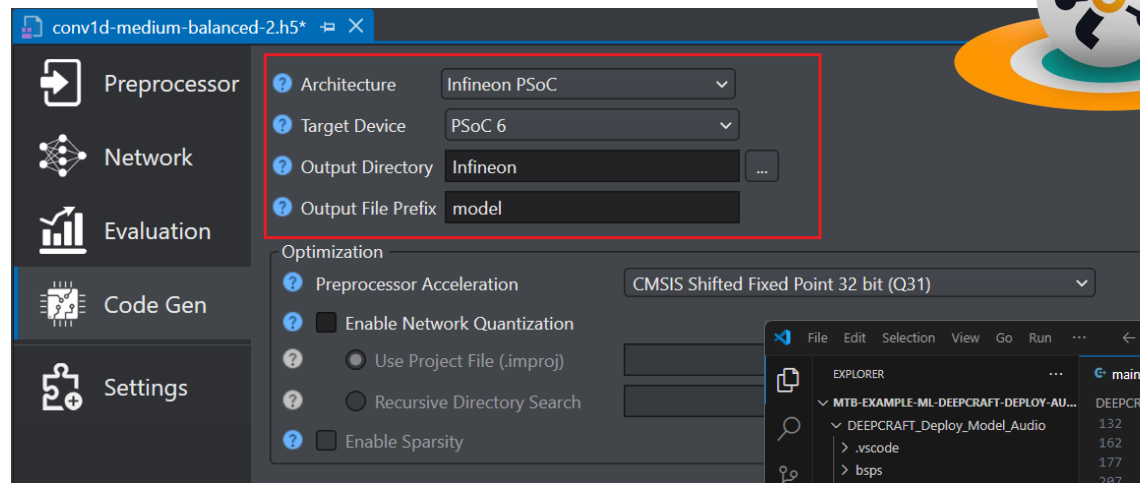
		(unlabelled)	down	up	Total
Predicted	(unlabelled)	93.89 %	0.46 %	0.48 %	94.82 %
	down	1.17 %	1.48 %	0.00 %	2.66 %
	up	0.83 %	0.01 %	1.68 %	2.52 %
	Total	95.89 %	1.95 %	2.16 %	100.00 %

Display Unit: Percentage



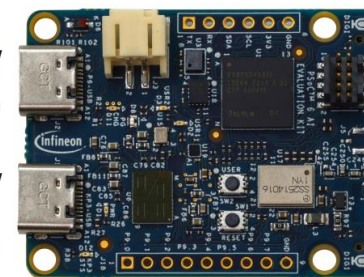
Edge AI | Model Deployment

DEEPCRAFT™ Studio – Selected Model (.h5)

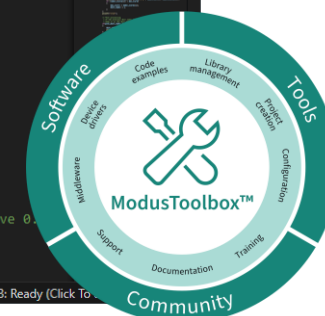
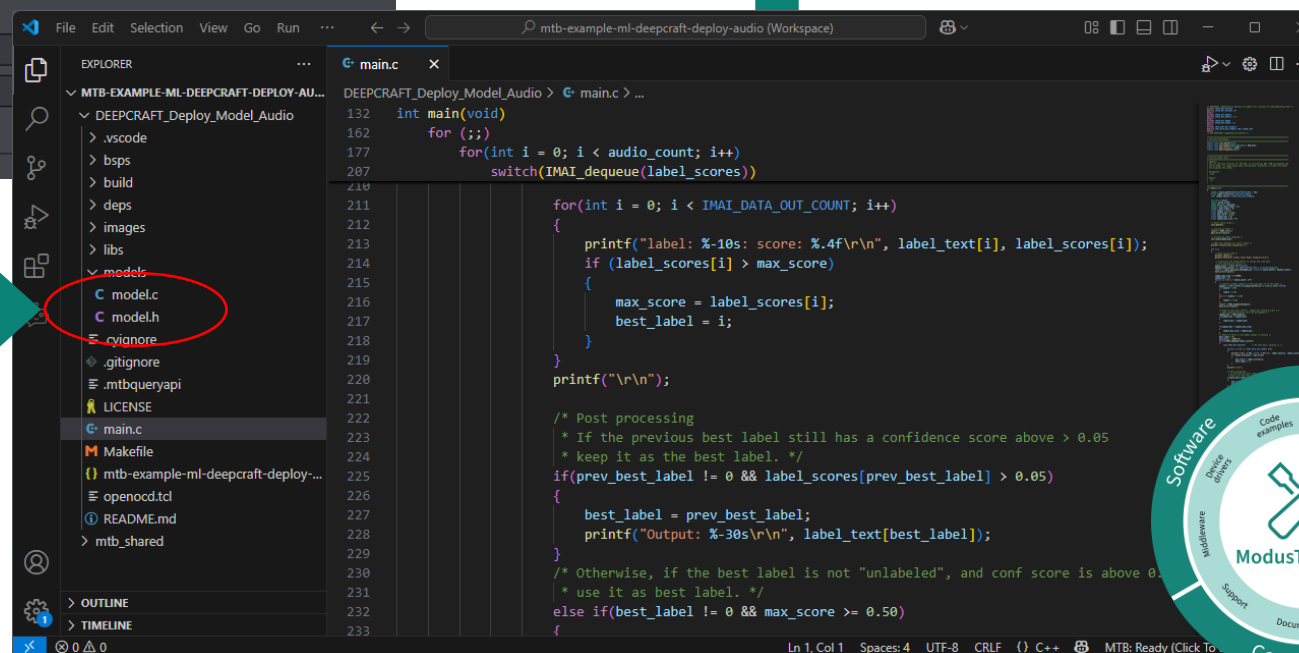


USB /
Data Collection

Debug /
Programming



PSOC™ 6 AI Eval Kit
(CY8CKIT-062S2-AI)



ModusToolbox™ (using VS Code IDE) - Deploy Code Example

Getting Started | PSoC™ 6 AI Eval Kit

– PSoC™ 6 AI Evaluation Kit Getting Started Guide

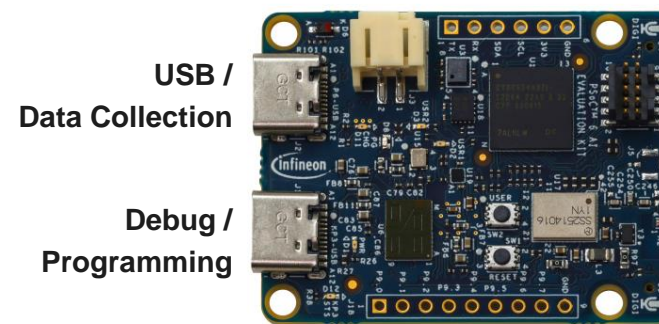
- Updating firmware to latest version
- Data collection in DEEPCRAFT™ Studio using Graph UX

– PSoC™ 6 AI Evaluation Kit User Guide

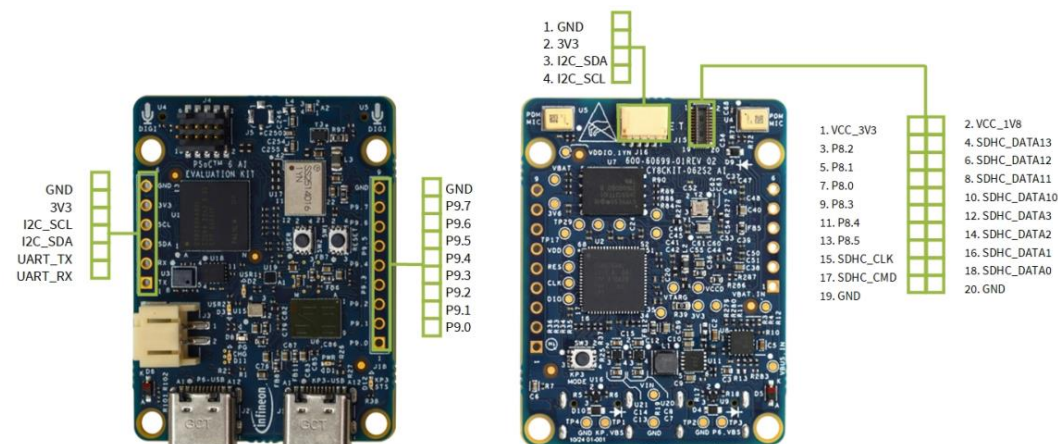
- Pin out details, board features
- Functional block diagram
- Steps on creating a ModusToolbox project
- Schematic details (also available as design file download)

– Highlight of features

- PSoC™ 62xA MCU | 150 MHz | 2048KB Flash | 1024KB RAM
- AIROC™ CYW43439 Wi-Fi / Bluetooth® module
- On-board programming (KitProg3)
- Sensors: PDM-PCM Digital Microphone, 6-axis motion sensor, magnetometer, barometric pressure sensor, and radar sensor.

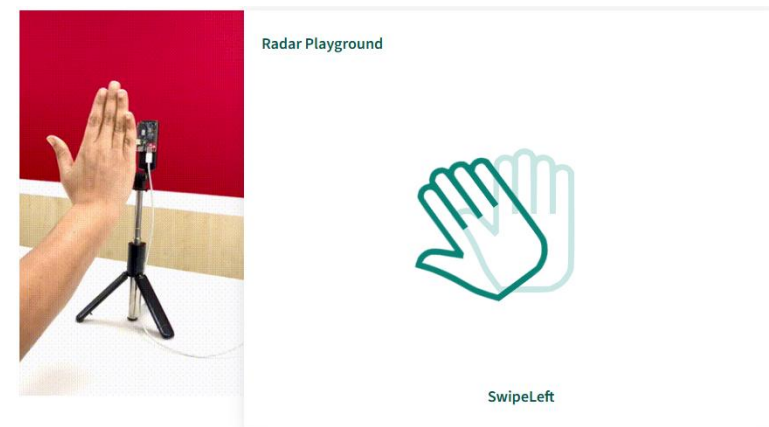
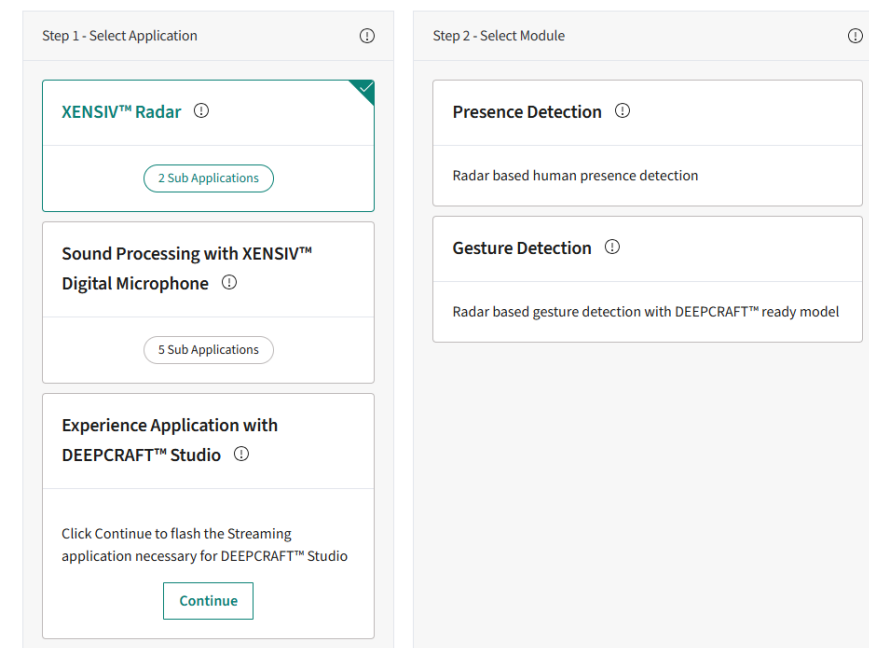


PSoC™ 6 AI Eval Kit
(CY8CKIT-062S2-AI)



Getting Started | Web evaluation of Edge AI models

- **Online Developer Experience** <https://devkit.infineon.com>
 - Web enabled programming of Edge AI based demos
 - Experience dev kit and AI without installing full set of dev tools
 - Interactive console with graphical detection results
- **Easily program and test various Edge AI models**
 - Radar | Presence Detection, Gesture Detection
 - Digital Microphone | Baby Cry, Cough, Siren, Factory Alarm, Snoring
- **Update or Restore DEEPCRAFT Studio Streaming Firmware**
 - Flash latest Streaming Firmware for using with Graph UX data collection
- **Prerequisites** | Follow pictorial guides on web page
 - Update KitProg3 firmware
 - Enter DAPLink CMSIS-DAP Programming Mode



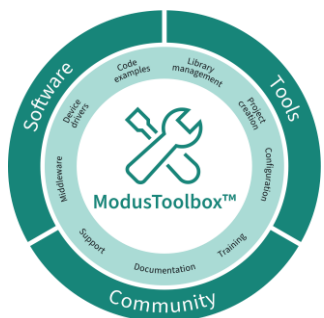
Getting Started | Software and Tools prerequisites



– DEEPCRAFT™ Studio

Edge AI development tool for data preparation, model creation, and code generation

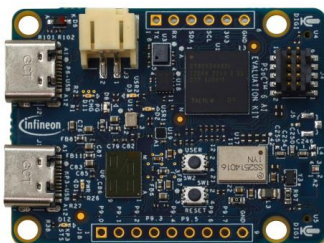
- Available from [Infineon Developer Center](https://www.infineon.com/developer-center) and <https://www.imagimob.com>
- Requires account registration on Imagimob.com, used for tool access and cloud-based training



– ModusToolbox™ Software

Development ecosystem for Infineon microcontroller and embedded development

- Available from [Infineon Developer Center](https://www.infineon.com/developer-center), requires account registration on Infineon.com
- Installed using the ModusToolbox™ Setup program
 - Base Tools Package, Eclipse IDE or VS Code, GCC Toolchain
- Available code examples within ModusToolbox™ Project Creator



– PSOC™ 6 AI Kit Streaming Firmware

Precompiled firmware that supports data collection into DEEPCRAFT Studio

- Programming steps detailed in the [PSOC™ 6 AI Kit Getting Started Guide](#)
- Additional walk-through available at this [Firmware Update Tutorial](#)

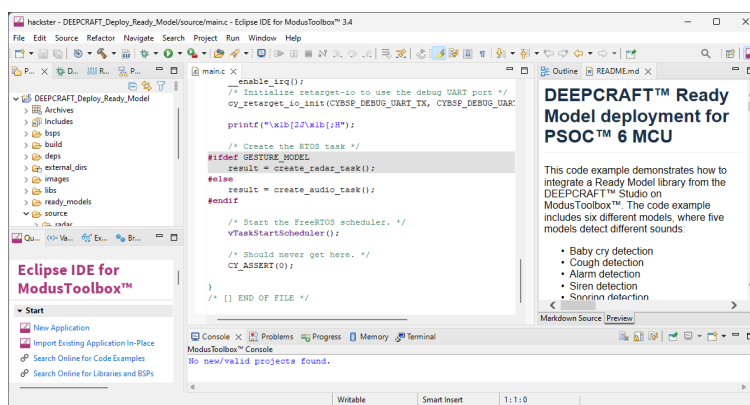
Resources | DEEPCRAFT™ Ready Models and Code Examples

– DEEPCRAFT™ Ready Models

- Production-ready Edge AI models available as pre-compiled demo images
- Evaluation (time-limited) binary libraries (.a) available for select models
 - Audio | Baby Cry, Cough, Siren, Factory Alarm, Snoring Detection
 - Radar | Hand Gesture Detection

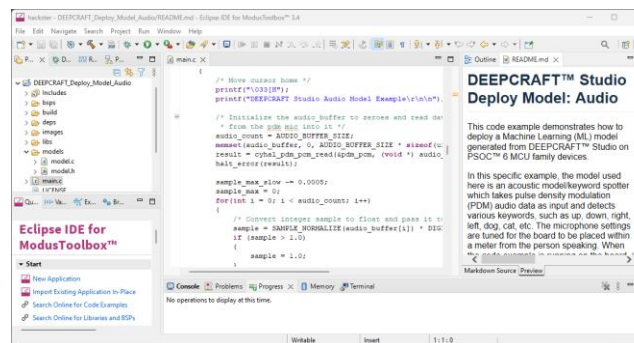
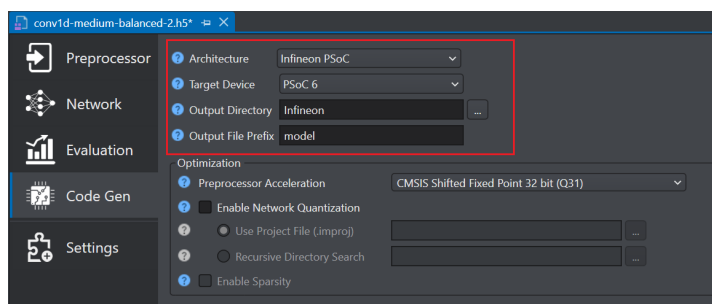
– DEEPCRAFT™ Ready Model deployment for PSOC™ 6 MCU

- Available in ModusToolbox™ Project Creator for CY8CKIT-062S2-AI BSP
- Compiler options for switching project between the available Ready Model eval binaries
 - Refer to README for edits to select the desired Ready Model use case



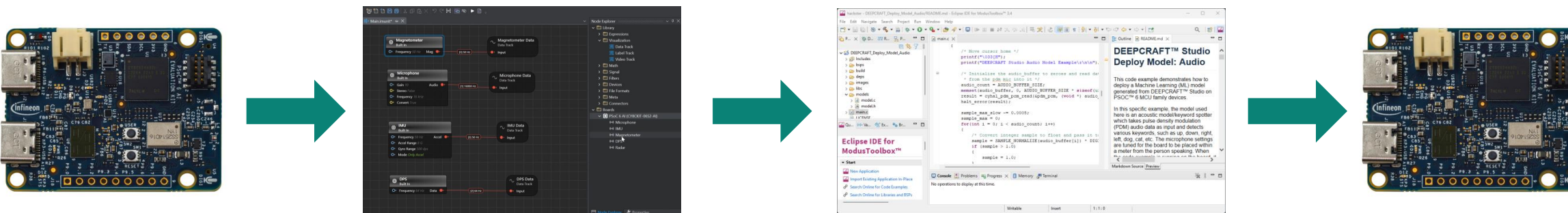
Resources | DEEPCRAFT™ Starter Models and Code Examples

- DEEPCRAFT™ Starter Models projects
 - Reference Edge AI models available as complete DEEPCRAFT™ Studio project
 - Full set of labeled data with pre-trained models
 - Audio | Baby Cry, Gunshot, Chainsaw, Home Sounds, Drill Material, Siren, Keyword
 - Motion | Fall Detection, Human Activity, Drill Material, Fan Anomaly
 - Touch | CAPSENSE Touch Detection
- DEEPCRAFT™ Studio Deploy Model | Audio, Motion
 - Available in ModusToolbox™ Project Creator for CY8CKIT-062S2-AI BSP
 - Code Example will include default model that works out of the box
 - Additional models can be generated from the associated DEEPCRAFT™ Starter Model project



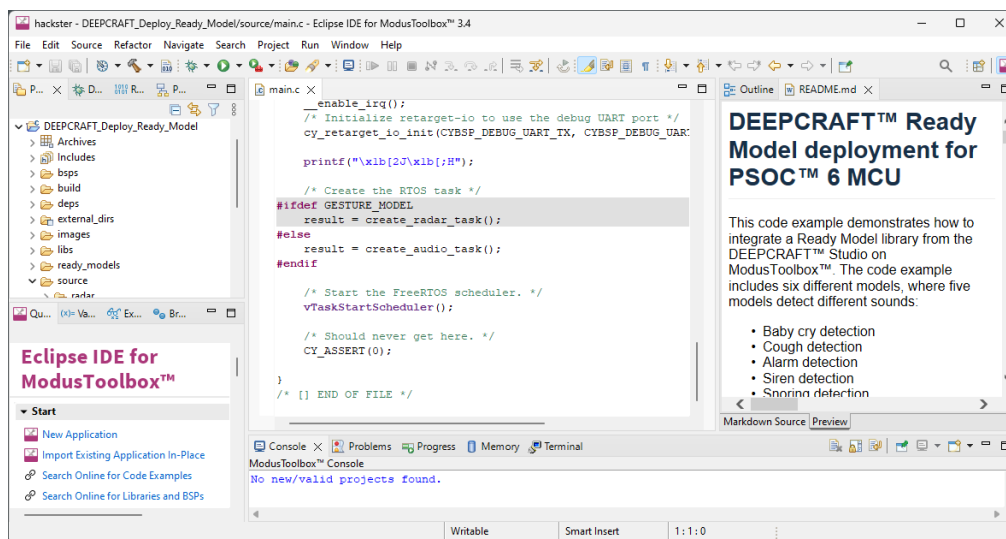
Resources | Firmware and Code Examples for custom models

- DEEPCRAFT™ Streaming Protocol Firmware and Graph UX
 - Streaming Protocol firmware | Enables sensor collection from the PSoC™ 6 AI Kit's on-board sensor
 - Graph UX | Library of graphical “nodes” supporting devices, pre-processing, and visualization
- DEEPCRAFT™ Studio Deploy Model | Audio, Motion, Radar
 - Available in ModusToolbox™ Project Creator for CY8CKIT-062S2-AI BSP
 - Code Example will include default model that works out of the box
 - Additional models can be generated from the associated DEEPCRAFT™ Graph UX based project
- DEEPCRAFT™ streaming protocol v2 for PSoC™ 6 MCU
 - Available in ModusToolbox™ Project Creator for CY8CKIT-062S2-AI BSP
 - Source code version of DEEPCRAFT™ Streaming Protocol Firmware

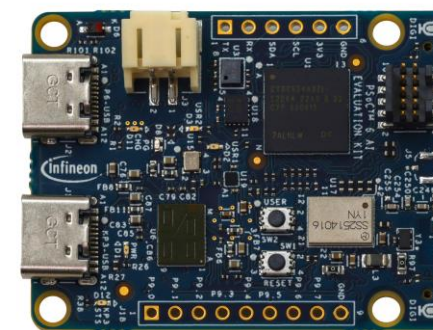


Live Demonstration

Demo | Leveraging DEEPCRAFT™ Ready Models



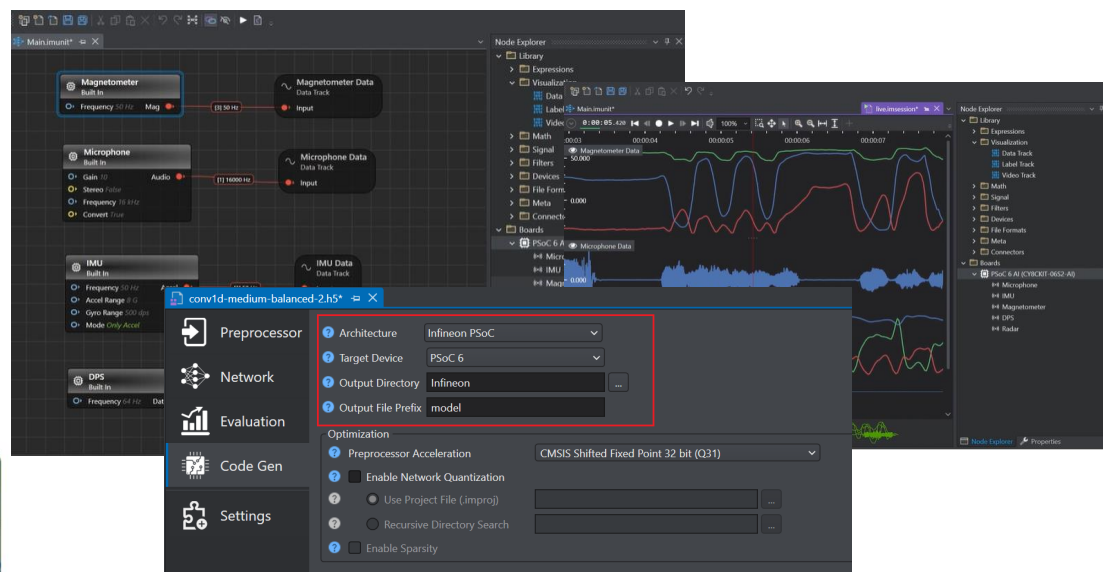
ModusToolbox™ (using Eclipse IDE)



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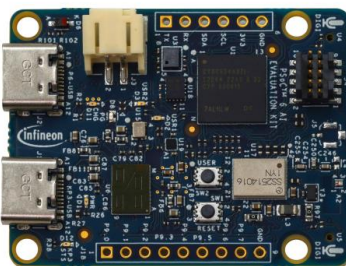
Demo | Creating custom Edge AI models

DEEPCRAFT™ Studio



Streaming Firmware

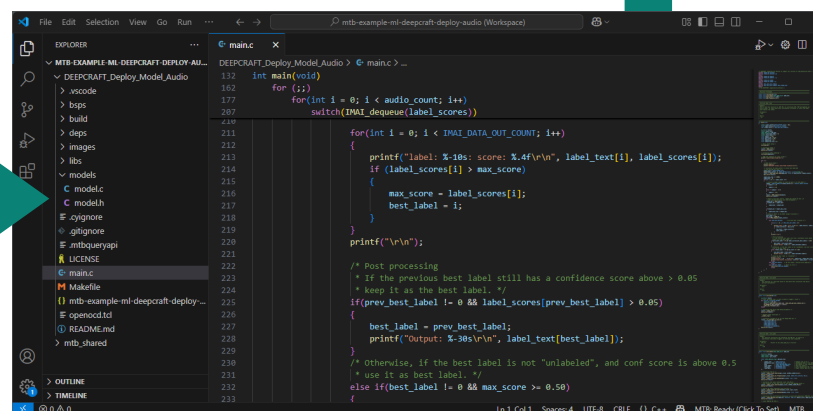
USB /
Data Collection



Debug /
Programming

PSoC™ 6 AI Eval Kit
(CY8CKIT-062S2-AI)

Code
Generation



ModusToolbox™ (using VS Code)

USB /
Data Collection

Debug /
Programming



PSoC™ 6 AI Eval Kit
(CY8CKIT-062S2-AI)

Deploy

Summary of resources used in this webinar

- Downloads
 - [DEEPCRAFT™ Studio](#)
 - [ModusToolbox™ Setup program](#)
- Code Examples | available in ModusToolbox™ Project Creator
 - [DEEPCRAFT™ Ready Model deployment for PSOC™ 6 MCU](#)
 - [DEEPCRAFT™ Studio Deploy Model: Audio](#)
 - [DEEPCRAFT™ Studio Deploy Model: Motion](#)
 - [DEEPCRAFT™ Studio Deploy Model: Radar](#)
 - [DEEPCRAFT™ streaming protocol v2 for PSOC™ 6 MCU](#)
- PSOC™ 6 Streaming Firmware
 - [Pre-compiled hex file direct download](#)
 - [Update tutorial with video](#)
- Documentation:
 - DEEPCRAFT Studio | Detailed Guides
 - [Imagimob Developer Portal](#)
 - PSOC™ 6 AI Kit
 - [PSOC™ 6 AI Kit User Guide](#)
 - [PSOC™ 6 AI Kit Getting Started Guide](#)
 - ModusToolbox™
 - [ModusToolbox™ Installation Guide](#)
 - [ModusToolbox™ Eclipse IDE User Guide](#)
 - [ModusToolbox™ VS Code User Guide](#)
 - [ModusToolbox™ User Guide](#)
- Tutorial Videos
 - [Firmware Update Tutorial](#)
 - [Using DEEPCRAFT™ Ready Models in ModusToolbox™](#)
 - [Additional ModusToolbox™ Videos](#)

