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D.E.R.T.

Digital Environment Regulation Tool

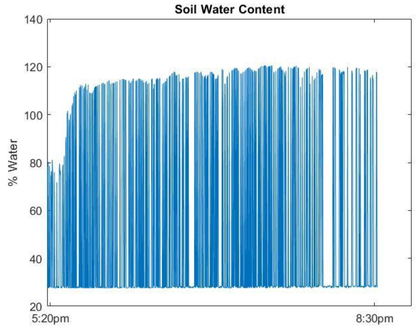
DERT is the brains for an affordable smart greenhouse.

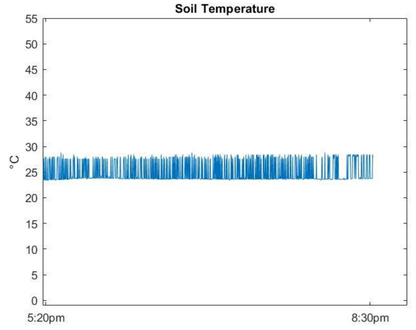
Equipped with four I2C I/O ports and three transistor-driven digital output ports, DERT can use a wide variety of sensors and actuators.

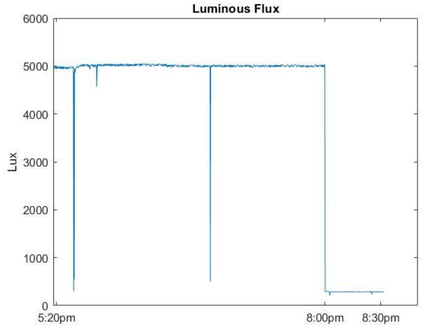
This proof-of-concept uses a Chirp soil sensor, BH1750 light sensor, and SHT-30 air sensor to grow California Wonder bell pepper seedlings.

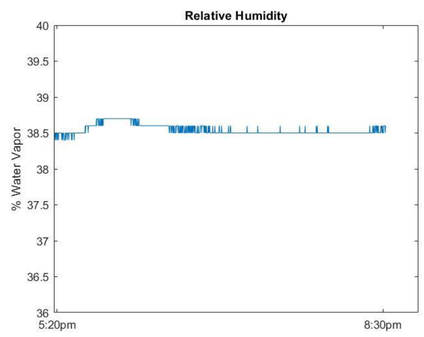
- One manufacturer defect found, one part replaced
- Two mfr. software bugs reported
- Thirty-five bell peppers seeded

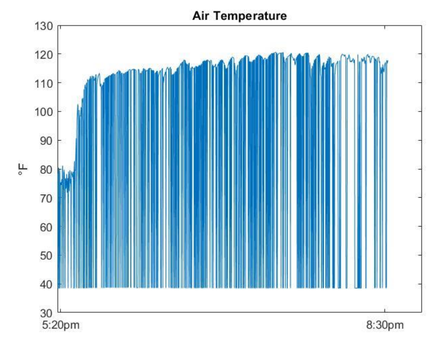
Thank you to John Lund, Jonathan Georgino, and my classmates, friends, and family for all their support.



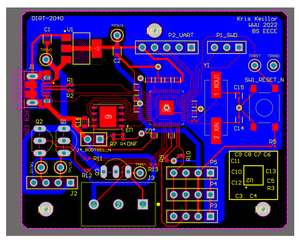


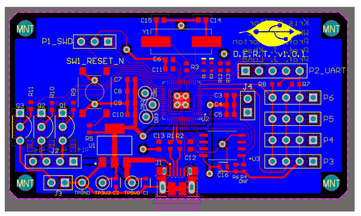


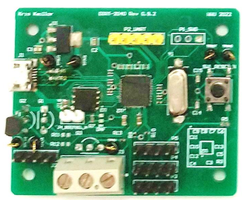


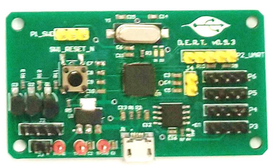


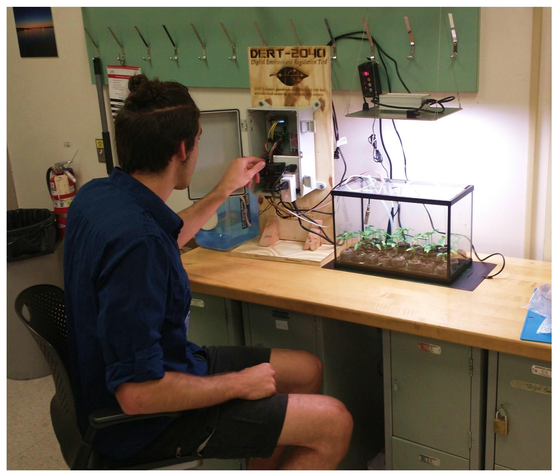
Prototype boards and final PCB layout:











- Draws a maximum of 0.4W at 5V.
- Besides the four I2C ports and three DO ports, DERT is also equipped with one UART, SWD, and USB interface each; three debug bits; and two indicator LEDs.
- v2.0 will run off POE instead of USB, use latching connectors for sensors, have more IO ports, onboard relays, and LPWAN communication.

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