Built in 7 weeks by 76 students, SmartGrow fused IoT innovation with agile teamwork and software assurance practices.

SmartGrow Project in CyNex

SmartGrow @ CyNex: Cultivating Innovation Through Student-Led IoT Projects

– By Raja Jamilah Raja Yusof

From Classroom to Cultivation: A Project Rooted in Learning

As part of the course WIF3002: Software Process and Quality (Semester 2, 2024/2025) led by Dr. Raja Jamilah Raja Yusof, 76 third-year Software Engineering students from Universiti Malaya embarked on an ambitious journey to design, develop, and deploy SmartGrow—a modular IoT system for automating the care of home-grown plants. Organized into 16 coordinated groups, the students delivered a high-fidelity working prototype within just seven weeks, complete with integrated sensors, ESP32 microcontrollers, and real-time mobile and web dashboards. Their system not only functioned technically but also sustained real chili and eggplant plants—a living outcome of teamwork and engineering innovation.
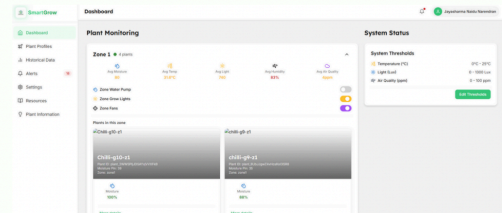
System Specific Pages

Historical Data Page (Website Only)
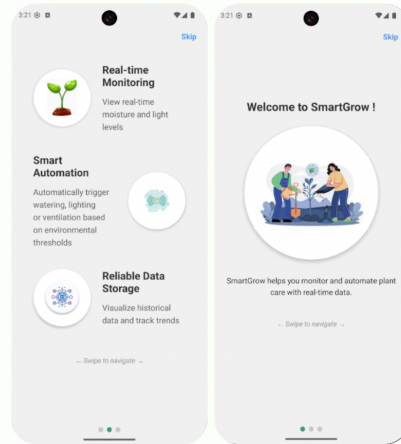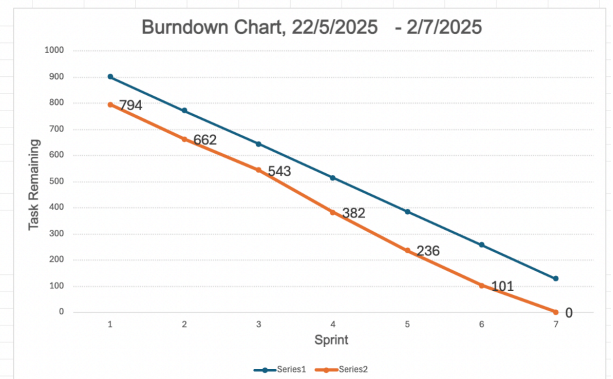
Onboarding Page (Mobile Only)

Overall Monitoring Dashboard (Website Only)

SmartGrow Mobile and Web Application page

Agile in Action: Teamwork, Ownership, and Quality

The project was conducted entirely within CyNex, the Faculty's innovation zone and student incubator space for Smart Environment initiatives. Here, students operated like a professional software team, organized into roles such as Project Management, Quality Assurance, UI/UX, Integration, and Development. They followed Agile practices, peer-reviewed their work, benchmarked progress weekly, and even adapted their watering system manually before automation kicked in—showing critical thinking, resilience, and responsibility. The Agile Assessment Model used rewarded continuous improvement and teamwork while simulating real-world industry expectations.

Sprint	Ideal Work Remaining (Task)	Actual Work Remaining (Task)
1	900	794
2	771.4285714	662
3	642.8571429	543
4	514.2857143	382
5	385.7142857	236
6	257.1428571	101
7	128.5714286	0

|	
Total (Task)	900
Days	7
Task to Complete per Day	128.5714286

Agile Software Development Approach

Cultivating Future Technologists at CyNex

SmartGrow is the first phase of a larger CyNex vision to host student-led IoT projects in Smart Home, Smart Office, Smart Garden, and other digitally enhanced environments. Its physical infrastructure and modular system design are now available as a testbed for future classes to build upon. This isn't just a successful classroom project—it's a scalable innovation platform, where students apply classroom knowledge to real challenges, co-creating the future of smart living from the ground up.
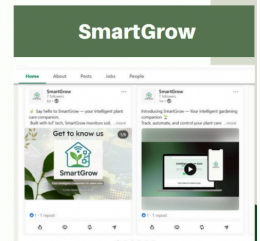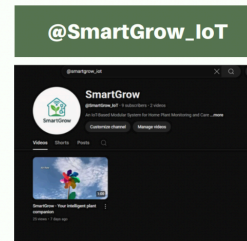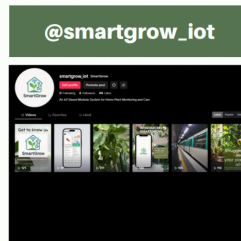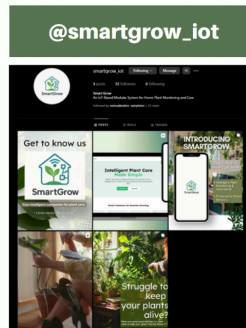
SmartGrow in Social Media

To extend its impact beyond the classroom, the SmartGrow project was actively promoted across multiple social media platforms—including YouTube, TikTok, Instagram, and LinkedIn. You can watch the teaser video here: https://www.youtube.com/watch?v=lx3sWWiE35o.

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