



Holistic Neurodiversity Framework and AI-Driven Dashboard for Neurodivergent Students

Tyler Williamson | Student ID: 2237644 | BSc (Hons) Computing (Data and Information Systems)

Project Overview

1. AIM AND DESCRIPTION

Key Innovation and Outcome: An integrated, privacy-first AI platform that automates administrative friction and provides real-time support and barrier analytics for neurodivergent students. Developed to tackle the **36%** UK higher education non-continuation rate among autistic students [1].

2. RESEARCH DRIVERS

- **Systemic Accommodation Limits:** Static plans fail to adapt to dynamic, fluctuating needs daily like executive dysfunction and sensory overload [2].
- **The Administrative Tax:** Fragmented data silos force AuDHD students to act as case managers, driving masking, burnout, and attrition [3,5].
- **Post-16 Support Cliff:** Unintegrated systems leave autistic graduates facing an employment gap (only **36%** in employment) [4].

System Architecture and Evaluation

3. TECHNICAL IMPLEMENTATION

- **Privacy-First Encryption:** Chat logs are converted to binary code. Student identities are separated from chat logs, and staff only see aggregated barrier trends, not raw chat.
- **Automated Data Flow:** Student prompts trigger AI responses in seconds, while logging structured data safely in the background.
- **4-Tier Architecture:** Combines a student chat app, AI processing, a secure cloud gateway, and a backend SQL database [6, 7, 8].

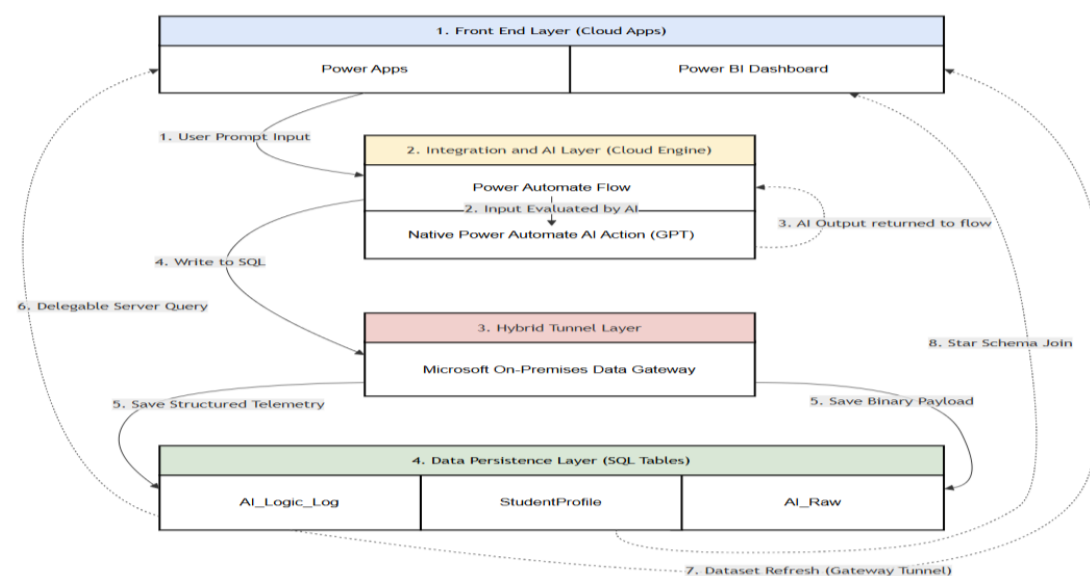


Figure 2: System Architecture

Roadmap and Deliverables

5. Strategic Roadmap

- 1 - 3 Months:** Re-bind drawer variables; add font scaling accessibility toggles.
- 4 - 6 Months:** Integrate RAG short-term memory buffer to eliminate prompt context looping.
- 7+ Months:** Scale framework to workplaces, and other enterprise environments.

Figure 3: Phased Strategic Roadmap

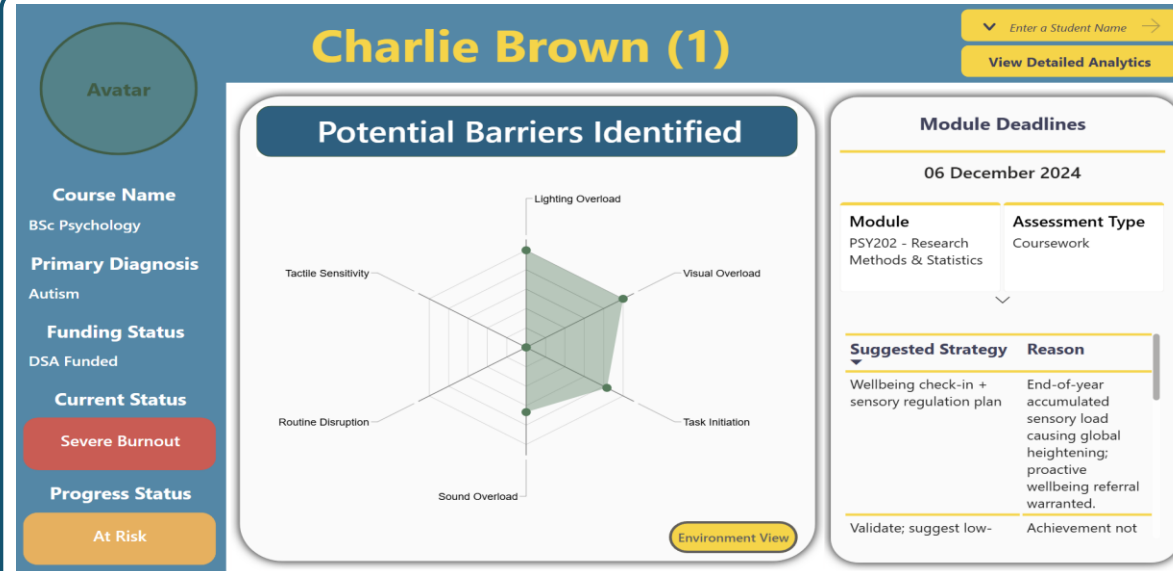


Figure 4: Power BI Staff Dashboard displaying student barrier telemetry

In Employment 15 Months Post-Graduation

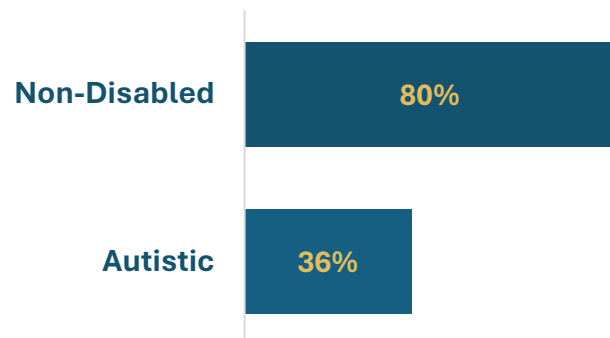


Figure 1: Post-Graduation Employment Rate [4]

4. DUAL-TRACK EVALUATION

Track 1 (Technical Audit):

- Achieved an 80% Pass Rate on functional stability (handled 800+ char stress inputs; drawer bug logged).
- 4.25/5.00 on low-glare UI accessibility.
- 100% Pass Rate on telemetry pipeline sync.

Track 2 (External Survey):

- Achieved 4.82/5.00 concept endorsement
- 4.36/5.00 layout clarity, with 90.9% agreeing it empowers self-advocacy and 72.7% valuing 24/7 coverage.

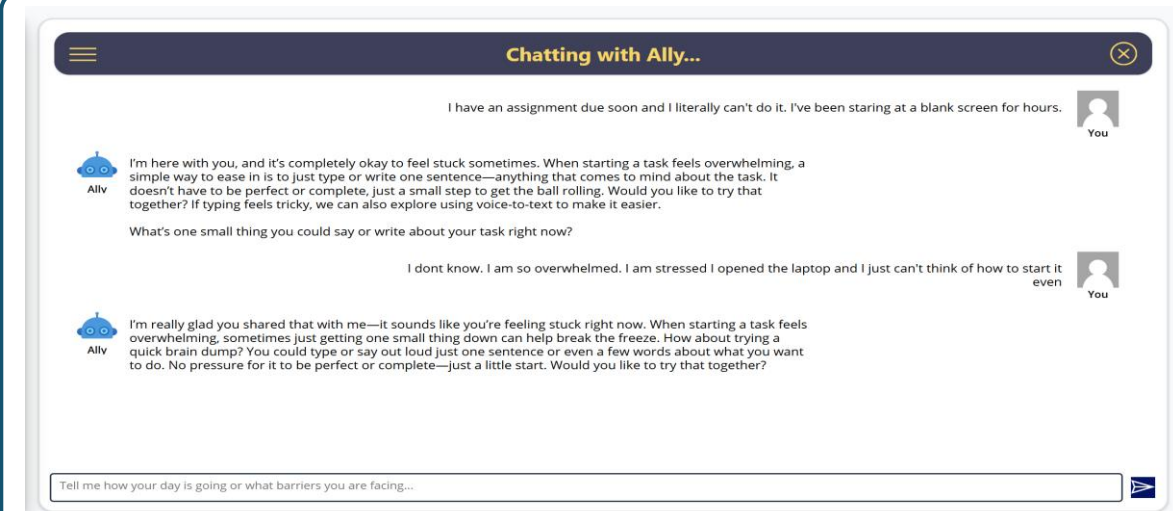


Figure 5: Ally AI Assistant WCAG 2.1 AA conversational interface [6]