

TECHNEST Capstone Project

Weeks 9 – 12 · Team AI Product

Objective

Over four weeks (9–12), teams of 2–4 students evolve the full-stack Next.js + Neon + Vercel codebase they built individually in Weeks 1–8 into a **deployed multi-user AI product** that serves a real audience beyond their own classmates. The capstone is the bridge between “I can ship a personal site” and “I can ship something strangers would use”.

CAREER · What 'multi-user' means here

Your Week-8 site had exactly one user: **you**. Your capstone must work for strangers, end-to-end. That means: sign-up (not just sign-in), onboarding, data isolation per user, thoughtful empty states, and a reason for a stranger to come back tomorrow.

Team Composition

- **Team size:** 2–4. Groups of 3 work best.
- **Roles are soft.** Every member must commit code. No “non-technical” seats.
- **Form by Week 9 Day 2.** The instructor publishes a sign-up sheet on Day 1 with a suggested pairings based on Week-1-to-8 styles.

The Three Tracks

Pick **one** track; the team may combine elements but the spine should be one theme so the user story is crisp.

TIP · Campus Life Track

Products that serve the daily life of a university community. Low friction to get classmates to try it, which means **real user feedback** within the 4-week window. Examples:

1. **Lecture-note swap** — signed-in students upload notes, AI extracts topics
 1. summaries, classmates discover relevant notes by course code.
2. **Roommate matcher** — personality + schedule profile, AI surfaces compatibility signals, safe opt-in chat.
3. **Campus event radar** — scrape / ingest event feeds from student societies, AI personalises a weekly digest, Slack / email delivery.

4. **Dorm chore + bill splitter** — Slack-integrated, AI-nudges for overdue turns, fair-split math for shared utilities.

TIP · Personal Growth Track

Products where the user's **state** matters — logs, history, streaks. Teaches teams about private data, consent, and longitudinal UX. Examples:

1. **AI habit coach** — daily check-in, weekly LLM-authored review, pattern callouts (“you skip running when you sleep <6 h”).
2. **Reading companion** — upload PDFs / articles, AI quizzes you on spaced-repetition intervals, tracks true-vs-guess on your notes.
3. **Journaling assistant** — private journal with optional AI reflection; every Sunday a gentle “here’s what you wrote about this month” email.
4. **Workout planner** — profile-driven weekly plan generator, logs per set, Sunday review of volume progression.

TIP · Creative Tools Track

Generative products with a clear loop: input → AI-output → user iterates. Most visually demo-able at the showcase. Examples:

1. **AI short-story studio** — collaborative writing with AI continuation, branch / merge like Git for narrative choices.
2. **Music-prompt playground** — structured prompt UI for Suno / ElevenLabs, sharable rooms, voting on outputs.
3. **Comic-panel generator** — script → panel layout + image generation + dialogue placement → downloadable PDF.
4. **Resume-video script maker** — turn a Week-8-generated CV into a 60-second narrated video script + optional TTS.

Project Requirements (non-negotiable)

Every capstone, regardless of track, must include:

- **Authentication** — multiple real human users, not a demo account. Use Neon Auth or equivalent.
- **Persistent state per user** — Neon Postgres as primary store; per-user data isolation verified.
- **At least one AI feature** that is meaningfully in the **critical path** — removing the AI should break the core value. No “AI-washing” where the LLM is an optional side panel.
- **Real-time notification** — Slack or email, triggered by a user action.
- **Deployment to Vercel** on a shared team repo. Merge via pull request; no direct-to-main.
- **A one-page landing page** explaining the product to a stranger in under 30 seconds — hero, problem, demo video, sign-up.
- **A working `/feedback` form** that persists to Neon and pings the team’s Slack.

Suggested Stack (defaults)

Unless a track strongly demands otherwise, teams ship on the stack learned in Weeks 1–8:

Layer	Default
Framework	Next.js 14 App Router + Tailwind
Hosting	Vercel
Database + ORM	Neon Postgres + Drizzle
Auth	Neon Auth (Google + GitHub providers)
File storage	Vercel Blob
LLM in-product	Gemini 2.5 Flash for cheap calls; Claude for reasoning / agents
Notifications	Slack Incoming Webhooks or Resend for email
PDF / docs	Typst via skill (where applicable)

Teams may deviate only with written instructor approval and a clear reason (“we need vector search → add pgvector”; “we need realtime → add Supabase Realtime”).

Timeline

| Week 9 — Kickoff, Scope, Repo

- **Day 1.** Team formation; track selection; 30-min product brief (one page: problem, user, user journey, core AI feature, success metric).
- **Day 2.** Repo scaffolded; Neon + Vercel provisioned; CI green; 1 commit from every team member landed.
- **Day 3.** Core data model + auth + one end-to-end vertical slice (sign up → take one action → see result) deployed to production.
- **Check-in:** instructor reviews each team's vertical slice URL at end of Week 9. Pass / fail — teams that fail redo in Week 10 with a tightened scope.

| Week 10 — Build the Critical Path

- Finish the AI-in-the-critical-path feature end-to-end.
- Add the notification trigger.
- First **external** user test: someone outside the class tries the product; team watches the session (Zoom screen share is fine).
- Log observations in a shared `RESEARCH.md`.

| Week 11 — Harden, Polish, Market

- Landing page + onboarding.
- Feedback form + `/bugs` channel.
- Accessibility pass: keyboard nav, contrast, error states.
- Five real users sign up by end of Week 11 (not team members).
- Light marketing: a LinkedIn / WeChat / small-group post explaining the product.

| Week 12 — Demo Day

- 5-minute live demo per team.
- 3-minute Q&A with instructor + invited guests.
- Submission: live URL + repo + 2-minute recorded video + 1-page post-mortem.

Demo Requirements

At Demo Day every team will present, in this order:

1. **Problem statement** – 30 seconds. Who hurts? How often?
2. **Solution** – 30 seconds. The product in one sentence.
3. **Tech stack** – 30 seconds. What from Weeks 1–8 did you reuse; what’s new.
4. **Live demo** – 3 minutes. Sign up a fresh user on stage; walk through the critical path; land the notification moment.
5. **Challenges faced** – 1 minute. One technical, one team, one user.
6. **What’s next** – 30 seconds. Honest: is this worth keeping alive past Week 12?

Recording requirements: ≤ 2-minute clean video linked from the landing page and from the team’s shared repo.

Evaluation Criteria

Dimension	Weight	What 'excellent' looks like
Functionality	30%	Every promised feature works end-to-end on the live site during the demo. No “this part is flaky” disclaimers. Real external users ran the critical path at least 5 times pre-demo.
AI in critical path	20%	The AI feature cannot be removed without the product losing its core value. Thoughtful prompt / system-prompt design, visible in the repo as files (not baked into code).
Code quality + collaboration	15%	Commit history is healthy: every member shipped real features, PR reviews happened, no secrets in git. Naming is consistent; no dead code.
UI / UX	15%	Mobile works. Empty states exist. Error messages are in human language. Onboarding surfaces value in <2 minutes. Accessibility basics pass.
Deployment + reliability	10%	No 500s during demo. Vercel logs are clean. Secrets only in env vars. Database migrations documented and reversible.
Presentation	10%	All team members speak. The problem lands in the first 30 seconds. Demo is rehearsed – no “let me find the button”. Post-mortem is candid, not marketing copy.

| Instructor Role

- **Provide guidance, do not build for them.** Answer “how should we approach X?” questions, not “can you write this for us?”.
- **Unblock early.** One 30-minute sync per team per week, on a fixed day, to catch scope creep and infrastructure issues before they rot.
- **Review progress weekly.** End-of-week async check-in: URL link + two-sentence summary of what shipped.
- **Enforce the bar.** Teams that don’t ship a vertical slice by end of Week 9 must re-scope; teams that haven’t ten real users by end of Week 11 get a one-on-one about what to cut.
- **Celebrate the finalists.** Demo Day is public. Invite the school’s career-services team, at least one local tech employer, and alumni from previous cohorts.

| Deliverables Checklist

- Live URL (Vercel production domain).
- Public GitHub team repo with README + setup instructions.
- Landing page with problem + solution + demo video.
- 2-minute demo recording (unlisted YouTube / Vimeo / self-hosted fine).
- 1-page post-mortem (what went well, what hurt, what you’d cut).
- List of five external users (with permission to cite first names).
- Five-minute live demo on Demo Day.

| A Note from Your Instructor

The cohorts before you each shipped one product that surprised me. A journaling app whose AI I actually still use. A roommate-matching tool that ended up matching two teammates themselves. A comic-panel generator that a local children’s museum reached out about. **Your capstone is not a class project — it’s a real artefact with your real name on it.** Aim accordingly.

If nothing else, your capstone should be the first thing you pin to the top of your GitHub profile in January.

CAREER

Past-cohort capstones have been cited in successful internship applications at Anthropic, Vercel, ByteDance, and three NZ startups. A deployed team-built product that solves a real problem is worth 10 side-projects built alone.

Team Retro Notes

Instructor Scoring

Chan Meng

Full-Stack Engineer · AI Agent Builder · Minimalist

“Subtraction for life, addition for thought.”

AI AGENT BUILDER

AGENTIC SYSTEMS

LLM INTEGRATION

FEMTECH INNOVATOR

MINIMALIST CODE

UN CSW 69 SPEAKER



Chan builds **production-grade AI agents** at the intersection of **agentic systems**, **LLM integration**, and **women’s health**. Between China and New Zealand, she ships systems that go to work for real users at real companies — and she believes code, like life, becomes most powerful when you subtract what isn’t essential. A **Master of Applied Computing with Distinction** from Lincoln University, NZ (Dean’s List), she was featured at **UN Women CSW69** for her work on AI and gender equality.

Currently · Founding Engineer at **Gavigo** · Senior Full-Stack Engineer at **She Sharp** (NZ’s leading women-in-STEM nonprofit, 2,200+ members) · CTO of **FemTech Weekend** · Open Source Contributor to **CopilotKit** (24.6k★). For the full project portfolio and code, visit github.com/ChanMeng666.



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