hitcha.

A trust-first carpooling platform that matches Singapore commuters with private car owners already making the same journey – using route-intent ML matching and institutional social graphs to solve the coordination problem that limits GrabHitch

1. **Unique Selling Proposition & Key Technical Innovation**: Route-intent ML matching, institutional trust graph, and commute pattern inference built on a property graph architecture
2. **Potential Addressable Market**: 600,000 registered cars and 3.5M commuters in Singapore; NUS/NTU beachhead of 100,000 students and staff; B2B revenue via corporate subscriptions
3. **Competitive Analysis**: GrabHitch structurally broken; Illegal Telegram groups (135,000+ members) prove demand; hitcha is the only licensed, trust-first, ML-matched alternative
4. **Team**: 5 Year 1 NUS/NTU CS students with production experience across full-stack, ML infrastructure, backend, and UX; clear role ownership across all core technical domains
5. **Validation**: Structured interviews with 30 NUS car owners and a Telegram bot concierge pilot targeting 50 matched rides in 60 days; success criteria defined across 6 metrics
6. **Milestones and Usage of VIP Award**: S$10,000 allocated across infrastructure, insurance, legal, and marketing; MVP live on NUS campus by Month 5; 1,000 active users and corporate pilot by Month 10

Unique Selling Proposition & Key Technical Innovation

The Proposition

1. **Route-Intent Matching**
   hitcha matches on declared journey intent — where you regularly go, when, and how often — not real-time location. Drivers register recurring routes; riders subscribe to corridors. The match graph compounds in quality with every completed trip, turning daily commuters into reliable supply nodes and eliminating the cold-start problem corridor by corridor.
2. **Institutional Trust Graph**
   Matches are prioritised within shared institutional networks — same university, same employer, same estate — verified via .edu.sg or corporate email OTP. A verified NUS↔NUS match carries fundamentally different trust dynamics than an anonymous cold match. Trust propagates transitively through the graph: shared rides build scores that flow to second-degree connections.
3. **Commute Pattern Inference (ML)**
   For drivers who don't manually register routes, hitcha optionally infers habitual commute paths from on-device location history (consented, processed locally). Proactive suggestions surface automatically. The bottleneck to driver activation is friction, not interest.
4. **LTA Constraint as Competitive Moat**
   The two-trip daily cap keeps supply as genuine commuters. No well-capitalised player can subsidise professional drivers into dominance. A Grab-style incentive war is structurally impossible here.

Technical Architecture

1. **Data Model — Property Graph (Neo4j)**
   Core entities: `User`, `Route`, `TripOffer`, `TripRequest`, `Institution`, `Match`. Key relationships: `BELONGS_TO` (institutional membership), `SHARES_CORRIDOR` (offer↔request overlap score), `TRUSTED_BY` (interaction count + rating), `COMMUTES_VIA` (inferred confidence).
2. **Route Matching**
   Routes encoded as road segment ID sequences. Embeddings generated via Node2Vec on Singapore's road graph. Match similarity = cosine similarity of embeddings, filtered by Jaccard overlap ≥ 0.4. Geospatial queries via PostGIS (e.g. origins within 500m of rider home).
3. **Commute Inference Pipeline**
   GPS traces processed on-device → DBSCAN anchor detection (home, office, campus) → OSRM map-matching → departure time frequency analysis → proactive suggestion if route overlap ≥60%. Only corridor fingerprint sent to server; raw traces deleted on-device.
4. **Match Scoring**
   `Score = 0.35×routeOverlap + 0.25×timeCompatibility + 0.30×trustScore + 0.10×completionHistory`
   FAISS ANN search shortlists candidates before full scoring. Dispatch via Hungarian algorithm (small batches) or auction variant (large).
5. **Stack**
   React Native · Node.js/TypeScript · PostgreSQL+PostGIS · Neo4j · Redis · Python FastAPI (ML) · Firebase Auth · Google Maps · AWS · Twilio

Potential Addressable Market

Market Size (Conservative Estimates)

Segment	Estimate
Registered private cars	600,000
Daily commuting car owners (60%)	360,000
Driver supply at 5% activation	18,000 active drivers
Daily ride slots (2/driver × 5-day week)	180,000
Price-sensitive commuter sub-segment (10%)	350,000 riders
NUS + NTU beachhead	100,000 students + staff

Market Context

Singapore has ~600,000 registered private cars (LTA), the vast majority solo-driven daily. On the demand side, ~3.5M commuters — with students, young professionals, and shift workers actively seeking affordable point-to-point alternatives to GrabCar (S$15–25/ride). GrabHitch cost-recovery pricing of S$3–8 represents 60–80% savings. The Telegram groups prove demand is real even when the alternative is illegal and unsafe.

Revenue Model LTA rules prohibit commission on ride payments ⇒ B2B revenue source

Stream	Model	Unit Economics
Rider facilitation fee	S$0.50–1.00 per completed match	1,000 rides/month × S$0.75 = S$9K MRR
Corporate subscription	S$500–2,000/month per employer	1 partner = S$12K ARR
University licence	Annual fee for institution pool + analytics	Exploratory
LTA data partnership	Anonymised commute analytics	Long-term / speculative

Beachhead Strategy

Phase 1: NUS (Months 1–6):
50,000 students and staff. Dense commute corridors from Tampines, Woodlands, Jurong, Bishan, Clementi, Sengkang → Kent Ridge. Institutional email verification ready. Pre-launch: manual concierge matching via Telegram bot to validate corridor density before app launch.

Phase 2: NTU + HDB Towns (Months 7–9):
Parallel NTU onboarding. Expand to Tampines, Sengkang, Woodlands — high-density, underserved by direct MRT lines.

Phase 3: Corporate Pilots (Month 9+):
1–2 large employers in one-north/CBD. Employer subsidies as staff benefit; corporate email domain verification enables instant institutional trust.

Competitive Analysis

Regulatory Context

hitcha operates licence-exempt under LTA's P2P framework until 800+ registered vehicles (CSOL fee of S$2,500 only applies then). Drivers must verify licences and observe the 2-trip daily cap. Illegal operators face fines up to S$10,000 and/or 6 months jail.

The Competitive Landscape

1. **GrabHitch**
   a. is Buried inside a super-app optimised for food delivery and GrabCar, GrabHitch receives minimal product investment — Grab earns higher margins from GrabCar and has structural incentive to deprioritise Hitch.
   b. Late-night service (1am–5am) was removed in 2018, directly triggering the rise of Telegram hitch groups.
   c. Drivers report unprofitable economics after Grab's 10% platform fee. Notably, Grab's Hitch Club Diamond tier requires 65 trips/month which mathematically exceeds the LTA cap of 2/day × 30 days = 60. Grab's own loyalty programme appears to incentivise non-compliance. In practice, Grab exploits how LTA defines a single "ride" — drivers can make multiple pickups and drop-offs within one classified trip, effectively completing 3–4 transactions under one LTA ride. hitcha will not build around this ambiguity.
2. **Telegram Hitch Groups**
   They are the Real Revealed-Preference Competitor
   Illegal, uninsured, no driver verification, messages auto-delete in 24 hours — and yet:

Telegram Group Names (verbatim)	**Members** (Mar 2026)
“Telegram SG Hitch Singapore”	40,008
“SG Hitch Female Drivers Riders”	27,704
“🇸🇬 SGP Hitch …”	67,753

Positioning Matrix

	hitcha	**GrabHitch**	**Telegram**	**RydePool**
Institutional trust layer	✓	✗	✗	✗
Route-intent matching	✓	Partial	Manual	Partial
ML commute inference	✓	✗	✗	✗
Licensed / legal	✓	✓	✗	✓
Late night	✓	✗	✓	TBC
Dedicated product	✓	✗	N/A	Partial
B2B / corporate	✓ Roadmap	✗	✗	✗

Barriers to Entry

Institution-first cold-start bypass · Compounding ML data moat · LTA cap blocks commercial subsidisation · Institutional trust relationships can't be purchased

The Team

Arjo Das

Product Lead & Full-Stack
Year 1 NUS Computer Science & NUS College

Built and shipped end-to-end products independently across Python, Go, React/TypeScript, and Spring Boot. Applied AI/ML in production — OpenAI API integration, semantic search, multimodal signal processing (rPPG via FFT, MediaPipe), and real-time data pipelines. Incoming CVWO Summer Intern — gaining production React experience building civic tech systems with real user bases.

On hitcha: product vision, full-stack architecture, and end-to-end ownership.

Wazir Mohamed

ML & Infrastructure
Year 1 NTU Turing AI Scholar (Computer Science)

Currently building a RAG system for OCBC Bank's legal compliance team. Former SWE Intern at Singapore Press Holdings — managed AWS infrastructure with Terraform, CI/CD pipelines, and automated testing at scale. Engineered a 114M parameter PyTorch transformer from scratch. Built and deployed SpeakSEA, a real-time voice AI platform using WebRTC.

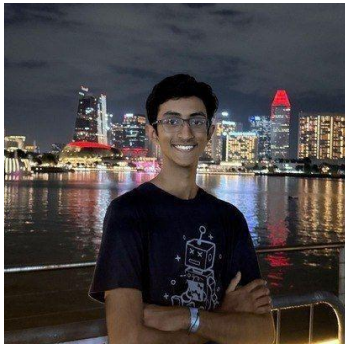
On hitcha: commute inference pipeline, route embeddings, and cloud infrastructure.

Elizabeth Khoo

Frontend, UX & Growth
Year 1 NUS Computer Science & NUS College

Built production-grade React applications including a Gantt calendar and Bento dashboard with full state management. UX design experience in Figma — designed a navigation-based parking assistant at SDG OpenHack. Built an AI accounting agent with live data pipelines at Ignitive Solutions. NUS Student Ambassador — direct campus access for user research, corridor validation, and grassroots growth.

On hitcha: frontend, UX, and campus outreach.



Srivathsan Ram

Backend & Database Lead
Year 1 NUS Computer Science & NUS College

Backend Lead at Developer Group @ NUS — designed and deployed production database schemas and backend logic with clear separation of concerns. Prior internship experience at startups optimising and debugging live applications. Competitive programming background (CS2102). Owns PostgreSQL/PostGIS schema design, Firebase auth, and AWS hosting.

On hitcha: backend API, database architecture, and infrastructure.

Jingchun Zhou

AI/ML & Systems
Year 1 NUS Computer Science & NUS College

Internship and project experience deploying AI systems using RAG and VectorDBs. Hackathon experience across ASR, computer vision, RL, and OCR. Fine-tuned CNN, RNN, and LLM architectures. Full-stack across Next.js, FastAPI, PostgreSQL, MongoDB, Firebase, and Redis. Strong systems languages background — Python, JS/TS, Java, C.

On hitcha: ML model development, scoring algorithm, and systems integration.

Validation

Pre-Product Market Evidence

The Telegram hitch groups represent hundreds of thousands of active participants accepting legal risk and physical safety risk to get a ride. That is the strongest possible revealed-preference signal.
GrabHitch's decline is traceable to specific, fixable product failures — not lack of demand.
The female-only hitch group and its blacklist subgroup directly validate the trust hypothesis: users will build parallel infrastructure from scratch to get the social safety layer that platforms won't give them.

Planned Validation: Month 1

Structured Interviews

30 NUS car owners Recruited via NUS Telegram groups and personal network. Key questions: solo commute frequency and cost, GrabHitch/Telegram hitch experience, friction points preventing carpooling, willingness to match within NUS network vs cold stranger, willingness to pay S$0.50–1.00 facilitation fee. Expected output: confirm 4–6 high-density corridors from residential zones into Kent Ridge.

Concierge Pilot

Months 2–3 Telegram bot (command-based, no app) for NUS commuters to register route and schedule. Team does matching manually. Target: 50 successfully matched rides in 60 days. Post-ride survey tracks satisfaction, trust, and repeat intent. Measures match quality (detour distance, time deviation) and no-show rate.

Validation Success Criteria

Metric	Target
Interview respondents confirming route clustering	≥80% on 5 corridors
Completed concierge rides	50 in 60 days
Repeat intent (post-ride survey)	≥70%
Recurring corridors with ≥10 participants/day	≥3 corridors
Safety incidents	0
NPS	≥40

Milestones and Usage of the VIP Award

Months 1–6: Validate & Build

Milestone	Month
Commute pattern survey (200+ NUS respondents)	1
30 structured driver interviews; corridor map produced	1–2
Telegram bot concierge pilot launched	2
50 manually matched rides; post-ride surveys collected	3
App MVP feature-complete; iOS TestFlight beta	4
Group PA insurance secured	4
App live on NUS campus (iOS + Android)	5
100 registered users; 50 completed in-app rides	6

Months 7–12: Expand & Monetise

Milestone	Month
Expand to NTU (institutional email verification)	7
Open 3 HDB corridors — Tampines, Woodlands, Sengkang	8
Corporate pilot launched with 1 employer (HR dashboard)	9
1,000 active users; 500 monthly completed trips	10
CO_2 savings dashboard live in-app	11
Seed fundraising prep / next grant application	12
(Phase 3 unlock: real-time matching within verified trust pool at corridor density)	12+

Spend Item	S$
AWS infrastructure (EC2, RDS, S3 — 6 months)	1,500
Google Maps Platform API	600
Group PA insurance (pilot cohort)	800
Legal consultation (T&C, privacy policy, LTA compliance)	800
Campus marketing (posters, digital, orientation event)	700
UI/UX design sprint	800
Twilio Verify (OTP + phone masking)	200
App Store accounts (Apple + Google)	200
Survey tooling (Typeform Pro)	200
Total	**~5,800**

Spend Item	S$
AWS infrastructure (scaled for 1,000+ users; Neo4j upgrade)	1,200
Insurance renewal + corporate rider coverage extension	800
Marketing — HDB towns + corporate onboarding	800
Legal — corporate data agreement + PDPA audit	600
Google Maps API (higher volume)	400
Corporate pilot user research	200
Contingency	200
Total	**~4,200**

Regulatory Note
hitcha operates licence-exempt under LTA's P2P framework for the entire grant period. Driver licence verification and the 2-trip cap are enforced at zero licensing cost. Drivers use their own car insurance (Etiqa, FWD, Income, MSIG, AIG all confirm carpooling coverage). hitcha's platform obligation is a group Personal Accident policy covering riders (estimated S$600–1,200/year for a pilot cohort)