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PROJECT TITLE: [LUMÉ: INTELLIGENT MATCHMAKING AND EMOTION-AWARE DATING APP POWERED BY AI]

ABSTRACT

Online dating platforms help people connect and start romantic relationships in the digital world. This became very important during the COVID-19 pandemic when meeting in person was hard. But these platforms often have problems like safety risks, shallow matchmaking, and boring user experiences. The global online dating market will hit \$9.2 billion by 2025 (Statista, 2023). So, there is a big need for new ideas to fix these issues. In Malaysia, 32.4% of 1,000 people surveyed have used dating apps, and 47.8% of those still use them (Chan et al., 2023). Yet, what young adults aged 18-30 in Malaysia think about these apps is not clear. Lumé is a web-based dating app made to change this by using smart artificial intelligence (AI) tools for both the world and Malaysia.

Lumé uses K-Means clustering through ML.NET to match people based on real compatibility, not just looks. This helps the 60% of users who say current apps focus too much on surface traits (Pew Research Center, 2023). Lumé also uses sentiment analysis to understand user feelings in chats, making talks deeper. This fits with the 73% of young singles who want clear intentions from partners (Cloudwards, 2025). Safety matters because 28% of users face harassment (Pew Research Center, 2020). Lumé keeps users safe with a toxic chat filter from the Perspective API, photo checks by admins, and fast chats using SignalR. In Malaysia, trust is a big reason people choose apps (Chan et al., 2023). Lumé's safety features build that trust. The app uses Angular for an easy front-end, .NET Core for a strong back-end, and SQL Server for safe data storage. It runs on Azure for smooth use.

Lumé looks at the Unified Theory of Acceptance and Use of Technology (UTAUT) from Chan et al. (2023) to understand what makes Malaysian young adults use dating apps. The key factors are how well the app works (performance expectancy), how easy it is to use (effort expectancy), what friends think (social influence), if tools are available (facilitating conditions), and trust. Chan et al. (2023) tested these ideas with surveys and found performance, social influence, and trust matter most. But their study had issues like people ignoring surveys and not enough Malay or Indian users. Lumé fixes this by doing bigger research and designing for all users in Southeast Asia, starting with Malaysia.

Over 60 million people in the U.S. used dating apps in 2023 (Statista, 2023). In Malaysia, 41% of 16-24-year-olds and 43% of 24-34-year-olds have tried them (Müller, 2022, in Chan et al., 2023). Lumé targets people aged 18-45 who want real, lasting relationships. It solves safety, match quality, and engagement problems. Lumé stands out in a busy market and helps developers rethink online dating. It makes a place where users in Malaysia and beyond can build true connections, especially where trust and culture shape choices.



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PROBLEM

Online dating has changed how people meet each other. But it also brings big problems that make users unhappy and less trusting. A 2020 study says 30% of U.S. adults have used dating apps (Pew Research Center, 2020). Still, 45% felt more upset than happy, and 28% faced harassment or felt unsafe (Pew Research Center, 2020). These numbers show three main issues: safety risks, bad matchmaking, and weak engagement. Many users deal with unsafe chats and poor matches. Plus, slow replies hurt how much people use the apps. These problems stop apps from giving users what they want.

The COVID-19 pandemic made things harder. Countries locked down, and people had to stay apart. This left many feeling lonely and wanting love. So, online dating became a key way to find dates. Users spent more time on apps than before. In Malaysia, 32.4% of 1,000 people surveyed have tried dating apps, and 47.8% of those still use them (Chan et al., 2023). Young adults, aged 18-30, use these apps a lot because they know tech well. But this tech makes them pull back from others and have fewer real-life romantic moments (Chan et al., 2023). They also wait to feel secure with money before dating and want to know themselves first. This means they look for partners who really fit them.

Young adults also fear committing. They avoid calling it "dating" because it feels too big a step. They stick to casual dating to stay safe from hurt. In Malaysia, 12% admit to faking their profiles, and 23% tweak them a little (Chan et al., 2023). This lying adds trust issues. Plus, users face rejection and unfair treatment on apps. Some spend too much time on them and get hooked because they hate being alone (Chan et al., 2023). These problems—like harassment, bad matches, and overuse—can grow into bigger troubles.

Even so, dating apps stay popular. Smartphones and the internet let users swipe fast and save time. In Malaysia, 41% of 16-24-year-olds and 43% of 24-34-year-olds have used them (Chan et al., 2023). But the same issues keep coming up. Safety, good matches, and quick chats are still missing. Lumé needs to fix these by making a safe space, matching people well, and keeping talks active for users in Malaysia and beyond who want real connections.



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SOLUTION

Lumé fixes these problems with a smart web app that uses new AI tools and fast tech. It tackles safety risks, bad matchmaking, and weak engagement to give users a better dating experience. People want safe chats, good matches, and quick talks (Pew Research Center, 2020). Lumé makes this happen with a mix of strong features and easy-to-use design.

For matchmaking, Lumé uses K-Means clustering with ML.NET. This tool looks at what users like, how they act, and what they care about to find matches that really fit. Many apps focus on looks, but 60% of users say this doesn't work well for them (Pew Research Center, 2020). K-Means groups people by their habits, not just their pictures. Studies show this way of matching works better because it finds deeper connections. In Malaysia, young adults want partners who match their goals, not just their looks (Chan et al., 2023). Lumé's smart matching helps them find that, making it different from other apps.

Safety is a big deal because 28% of users face harassment (Pew Research Center, 2020). In Malaysia, trust decides if people use dating apps (Chan et al., 2023). Lumé keeps users safe with a toxic chat filter from the Perspective API. This tool spots mean or rude messages right away and stops them. It also uses sentiment analysis to watch how chats feel. If someone gets upset or mad, it can step in to keep things calm. Research says this kind of tool makes online spaces safer and more fun. Lumé also checks all photos by hand. Admins look at every picture to make sure it fits the rules. This cuts down on bad content and builds trust, especially for users who worry about scams or fake profiles.

Engagement matters too. Users hate waiting for replies, and slow chats make them stop using apps. Lumé fixes this with real-time talk using SignalR. This lets people message fast and see who's online right now. No more waiting hours or days like on other apps. Young adults in Malaysia spend more time on apps since COVID-19 started (Chan et al., 2023). They want talks that feel alive, not stuck. SignalR makes that happen, keeping users interested and active. Plus, 73% of young singles want clear intentions from matches (Cloudwards, 2025). Lumé's fast chats and smart matching help show who's serious and who's not.

The app's tech is strong and simple to use. The front-end uses Angular and Bootstrap to look good and work well on any device. The back-end runs on .NET Core Web API, which handles lots of users without slowing down. Data stays safe in SQL Server with Entity Framework, so people's info doesn't leak. Lumé uses JWT to lock the app tight—only real users get in. Pictures and videos load fast with Cloudinary, keeping the app smooth. It all runs on Azure, so it's always up and ready, no matter where users are. This setup makes Lumé safe, quick, and easy for everyone.



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Lumé fits what users need in Malaysia and beyond. There, 41% of 16-24-year-olds and 43% of 24-34-year-olds use dating apps (Chan et al., 2023). They want apps that work well, feel safe, and find real matches. Lumé's AI tools match people smarter than old ways. Its safety features stop the harassment that 28% of users hate (Pew Research Center, 2020). Its fast chats keep people talking, not quitting. Other apps don't do all this together. Lumé stands out by fixing the big problems—unsafe spaces, shallow matches, and slow talks—while making users feel good about dating online.

This full plan gives users a safe, fun, and smart dating app. It listens to what young adults want, like trust and real connections (Chan et al., 2023). It uses tech to make dating better, not just faster. Lumé helps people in Malaysia and around the world find love that lasts, not just quick swipes.

TARGET MARKET

Lumé aims at adults aged 18-45 who want real relationships in a safe online space. Many of these people don't like current dating apps because they feel unsafe or can't find good matches (Pew Research Center, 2020). Lumé fits their needs with smart tech and strong safety. It starts with people who want more than quick swipes—they want trust and real connections.

In Malaysia, lots of young adults use dating apps. By 2025, 3.5 million people there will be on these apps, and most are aged 18-34 (DataReportal, 2023). They know tech well and spend tons of time online. A report says 41% of 16-24-year-olds and 43% of 24-34-year-olds in Malaysia have tried dating apps (Chan et al., 2023). They care about safety and being real, which matches what Lumé offers. Plus, 32.4% of 1,000 surveyed Malaysians have used dating apps, and 47.8% of them keep going (Chan et al., 2023). This group gets mad when apps don't keep them safe or match them right. Lumé fixes that with its toxic chat filter and smart matching.

Around the world, dating apps are getting bigger. The market will hit \$9.2 billion by 2025 because more people use smartphones and want new features (Statista, 2023). In the U.S., 56% of 18-29-year-olds and 47% of 30-49-year-olds have used dating apps (Pew Research Center, 2020). But 45% feel upset instead of happy with them (Pew Research Center, 2020). Young singles—73% of them—want matches who show clear intentions (Cloudwards, 2025). Lumé's AI helps with that, making it a good fit anywhere. Still,

Lumé starts in Southeast Asia, with Malaysia first. Internet use there is growing fast, and more people try dating apps every day (DataReportal, 2023). This makes it a great spot to launch.

Malaysia's online crowd is super active. They're on their phones all the time, and dating apps are catching on (DataReportal, 2023). In 2023, 32 million people in Malaysia used the internet, and that number keeps going up (DataReportal, 2023). Young adults there don't just want any app—they want one that feels safe and finds real love (Chan et al., 2023). Lumé's photo checks and fast chats give them



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that. Plus, 12% of Malaysian users fake their profiles, and 23% tweak them a bit (Chan et al., 2023). They need an app they can trust. Lumé's safety tools and real matches build that trust.

The market fits Lumé's plan. In Southeast Asia, millions of people aged 18-45 use dating apps. Malaysia alone has a big chunk of them, and nearby countries like Indonesia and Thailand are growing too (Statista, 2023). These users hate the same old problems—unsafe chats and bad matches (Pew Research Center, 2020). Lumé grabs this group by using smart tech and focusing on safety. It's not for everyone—just the ones who want something better. Other apps don't do enough about the 28% of users who get harassed or the 60% who hate shallow matches (Pew Research Center, 2020). Lumé steps in where they fail.

This target makes sense. Young adults in Malaysia and Southeast Asia want apps that work for them (Chan et al., 2023). They're online a lot and ready for something new (DataReportal, 2023). Globally, the push for better dating apps is huge (Statista, 2023). Lumé starts small in Malaysia but can grow big by giving users what they've been missing—safety, trust, and real love.

COMPETITION/CONTRIBUTION

Lumé jumps into a busy market full of big dating apps like Tinder, Bumble, Hinge, OkCupid, and Dating.com. But it stands out with its smart AI tools and strong safety focus. Most apps, like Tinder, use swipes to match people fast, and Bumble checks photos to stop fakes. Lumé goes further. It uses K-Means clustering to match people by what they like and how they act, not just looks. Plus, it has sentiment analysis to keep chats nice—stuff other apps don't do much. Its toxic chat filter stops mean words right away, and photo checks keep bad stuff out. SignalR makes talks happen fast, beating the slow replies on other apps. Lumé gives users something special—better matches and a safer space.

Most dating apps live on phones. Tinder, Dating.com, and others pack the mobile market tight—it's crowded there (Statista, 2023). Lumé picks a different path. It starts as a web app, a smaller corner of the market with less noise. Web dating apps aren't as big, but that's Lumé's chance to shine. For university students like me, building a web app is easier. We don't have cash or time to make both mobile and web apps at once. So, I chose the web for Lumé first. It's friendlier to students who can't jump into the mobile mess yet. The plan is simple—start small, make it great, then grow. I use the agile incremental model, building Lumé bit by bit. If partners come in later wanting to take it to mobile, we can expand. This way, Lumé grows smart without needing big money up front.

Lumé fights the big apps by being different. Tinder and Dating.com grab millions with mobile swipes—88 million users for Tinder alone (Cloudwards, 2025). But 45% of users get upset with them, and 28% feel unsafe (Pew Research Center, 2020). Lumé's web focus skips that mobile chaos. It aims at people tired of shallow matches and risky chats. In Malaysia, 32.4% of people have tried dating apps, and many want trust (Chan et al., 2023). Lumé's web setup and AI tricks give them that. The dating market will grow



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fast—7.4% each year until 2030 (Statista, 2023). Lumé can lead in the web space, a spot others don't fight for hard. It's not about beating Tinder everywhere—it's about owning the web part they ignore.

Lumé does more than just compete. It helps the world too. It makes online dating safer and fairer, hitting big goals like SDG 5 (Gender Equality) by stopping harassment—28% of users face this (Pew Research Center, 2020). It fits SDG 10 (Reduced Inequalities) by being easy to use and building trust, especially for young adults in Malaysia who need it (Chan et al., 2023). Its tech—AI and fast web tools—also pushes SDG 9 (Industry, Innovation, and Infrastructure), making digital spaces better. For students like me, Lumé shows how to start small and think big. It's not just an app—it's a way to fix dating problems and grow IT ideas.

Lumé's place is clear. It takes on mobile giants like Tinder and Dating.com by picking the web, a quieter spot with room to win. It's perfect for university students who can't build huge mobile apps yet. With agile steps, it can grow to mobile later if partners join in. The market's getting bigger (Statista, 2023), and users want safety and real matches (Cloudwards, 2025). Lumé fills those gaps, leading where others lag. It's a fresh take on dating that helps people and pushes tech forward.



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MILESTONES

Lumé grows using the Agile incremental model. This means we build it in small steps, test it with users, and make it better each time. We work in short sprints—about two weeks each—to add features and fix things fast. As a university student, I don't have big resources, so this way lets me start with a web app and grow it smart. If partners join later, we can take it to mobile. Here's the plan from January to September, then ongoing updates.

Sprint	Phase	Tasks	Timeline	Deliverables
Sprint 1-2	1. Conduct Market Research	<ul style="list-style-type: none"> Talk to target users (friends, classmates) with surveys or small groups Check out apps like Tinder and Dating.com (features, what's good/bad) Look at who we're up against in the web space 	January-February	<ul style="list-style-type: none"> Report on what users want List of app strengths and weaknesses Notes on web dating market
Sprint 3-4	2. Develop a Prototype	<ul style="list-style-type: none"> Set up basic matching (simple rules to start) Build authentication (JWT) and profiles Set up architecture (Angular, .NET Core, SQL Server) 	March-April	Functional prototype with login and profiles
Sprint 5-6	3. Test the Prototype with a Small Group of Users	<ul style="list-style-type: none"> Select diverse test users (e.g., friends, peers) Conduct usability testing to gather feedback (e.g., ease of use, accuracy) Make necessary changes and improvements based on feedback 	May	Usability test report, refined prototype



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Sprint 7-8	4. Launch a Beta Version of the Technology	<ul style="list-style-type: none"> • Release to a larger user group (e.g., via a test platform) • Gather additional feedback on performance and features • Make further improvements based on user feedback 	June	Beta version released, feedback analysis, enhance beta version
Sprint 9-10	5. Integrate Additional Features and Functions	<ul style="list-style-type: none"> • Add AI features (e.g., K-Means clustering, sentiment analysis) • Integrate SignalR for real-time chat • Test these additions for seamless integration 	July-August	App with AI and real-time features, test results
Sprint 11	6. Release the Final Version of the Technology	<ul style="list-style-type: none"> • Create marketing and promotional materials (e.g., demo videos, website) • Deploy on Azure • Establish partnerships or collaborations (e.g., with businesses or influencers) 	September	Launched app, marketing campaign, partnership agreements
Ongoing	7. Continuously Gather User Feedback and Make Updates and Improvements	<ul style="list-style-type: none"> • Monitor user feedback through surveys, reviews, and usage data • Prioritize and implement updates (e.g., bug fixes, new features) • Ensure compatibility with new systems or trends (e.g., OS, browser updates) 	Oct-Ongoing	Regular update logs, user satisfaction metrics, compatibility reports



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