

CS 4530 Project: HuskyOverflow

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Features

Messaging and Authentication: Our platform provides comprehensive security with email verification, password recovery, and two-factor authentication via email or authenticator apps and passwords are securely hashed. The messaging system supports direct and group conversations with message request controls. Features include read receipts, typing indicators, real-time notifications, message editing/deletion, search, and threaded replies, giving users full control over their communications.

Draft System: Drafts allow users to save incomplete questions and answers without publishing them publicly. Users can create, edit, and manage drafts with auto-save functionality, schedule drafts for future publishing, and maintain separate storage from live content. Changes persist across sessions, and drafts can be filtered by type. This feature enables thoughtful content creation without pressure to publish immediately.

Karma and Badge System: Our gamification system rewards quality contributions through karma points and achievement badges. Users earn karma via upvotes, unlocking permissions like answering karma-restricted questions. The platform features 15+ badges (Helper, Problem Solver, Mentor, etc.) that track milestones with real-time badge tracking. Users can choose what badges to display on their profile, while a leaderboard ranks top contributors. Real-time notifications celebrate achievements instantly.

Future Work

Messaging Enhancements: Add support for other media attachments (images, code snippets, files) and voice/video calling capabilities. Implement message scheduling, auto-translation for international users, and enhanced moderation tools for group chats.

Enhanced Draft Intelligence: Implement AI-powered content suggestions for drafts, including grammar checking, auto-tagging based on content analysis, and duplicate detection to prevent repetitive questions. Add collaborative drafts where multiple users can co-author content, and draft templates for common question types.

Advanced Badge & Karma Features: Expand the badge system with tier-based progression (Bronze, Silver, Gold variants), streak tracking for consistent contributions, and seasonal/limited-time badges for special events. Add karma decay mechanics to encourage ongoing participation.



Tech Stack & Design

• **Backend:** Node.js with Express.js, Socket.io, and JWT authentication

• **Database:** MongoDB with Mongoose

• **Frontend:** React with TypeScript, custom hooks, and Socket.io client

We performed a complete UI overhaul, modernizing components using Northeastern's colors: black, red, and gold. Following the existing FakeStackOverflow architecture, our features use the established pattern. On the backend: schema/model files, service files, controller files for HTTP handling, and test suites. On the frontend: service files, custom hooks, and components.

We updated existing schemas (user, message, question, answer, chat) to support drafts, enhanced messaging, and karma/badges, with the respective updates to routes, services, and tests. Some design decisions include storing drafts separately from published content and using answer references for data consistency. Sticking with this architectural approach let us add new features without breaking anything or sacrificing code quality.

