



Remote Seafarer Training Platform With Embedded Auto-Assessment Tools

SP Singapore Polytechnic

Technology Licensing Opportunity

Technology Overview

Maritime navigation, whether in the open sea or near busy ports worldwide, presents various challenges for mariners. Full mission ship-handling simulators (FMSS) are critical for enhancing navigation and ship-handling skills in any maritime setting. Traditionally, these simulators require mariners to travel to specific locations, adding significant time and cost and sometimes leading to underutilization of these facilities due to their inaccessibility.

The team has developed a software-based platform that enables maritime students to connect remotely to a navigation simulator through a secure internet link. Installed on standard PCs, it provides access to equipment such as radar and ECDIS, with real-time control, ship sounds, and two-way communication with instructors. A proprietary data transmission method ensures smooth performance even under low bandwidth.

To strengthen this remote training, the platform also incorporates an Auto Assessment tool that objectively evaluates trainee performance across various key areas, such as CPA management, safe distances from navigation aids, UKC monitoring, VHF communication, and speed management in varying conditions.

By combining remote access with automated assessment, the system ensures training and evaluation with consistent criteria. It helps companies maintain consistent crew competence, supports regulators in applying uniform standards, and gives mariners the ability to continue developing their skills even while at sea.

Potential Applications

- Navigators can train on the go by running exercises that simulate the terrain, traffic, and weather conditions of their destination port before arrival.
- Allows maritime training providers to maximize the usage of simulator facilities, as students can complete training sessions at remote sites that can be established anywhere, including aboard ships
- Provides objective and consistent assessments while making high-quality training accessible regardless of geographical constraints
- Shipping companies can ensure that their crews receive training and assessment with consistent criteria

Commercialization / R&D Opportunities

- ✓ Ready for commercialization
- ✓ Looking collaborators for further development / to develop new applications
- ✓ Available for licensing
- ✓ Accepting business plans from interested parties

Intellectual Property -

- Patent pending

Technology Features & Specifications

- **Faithful Simulation Environment:** Replicates the simulator interface with identical screens, ship sounds, and two-way voice communication, providing the same look and feel as on-site training.
- **Multi-Screen and Multi-Student Support:** Configurable displays allow multiple screens and students at remote sites, replicating simulator views.
- **Secure Connectivity:** VPN-based, encrypted connections between simulator and remote sites ensure reliability across long distances.
- **Optimized Bandwidth Usage:** Transmits only screen changes and dynamically adjusts refresh rates for smooth performance in low-bandwidth conditions.
- **System Integration:** Compatible with existing maritime simulators, minimizing deployment and integration challenges.
- **Turnkey Operation:** Automatically loads the correct screen configurations and establishes connections on startup, reducing setup time and error.
- **Automated Assessment:** Built-in tools to objectively evaluate trainee performance, customizable for different scenarios and conditions.
- **Fast Data Processing:** Generates detailed performance reports within minutes of exercise completion.

Unique Value Proposition

Countries including the United Kingdom, China, and India are increasing their investment in ship simulators, driving growth in the maritime training market. The developed remote training platform with embedded auto-assessment tools extends access to high-fidelity simulator training beyond the classroom, enabling seafarers to train and be evaluated consistently regardless of location — including while onboard. By combining remote connectivity with objective auto-assessment, it addresses two persistent challenges in maritime training: limited access to simulators and the subjectivity of performance evaluation. This ensures training that is scalable, accessible, and standardized across the industry.

Disclaimer

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