STN

AI-Powered Voice-Controlled Desktop Assistant

Speak. Ask. Done.

STN is an AI-powered desktop assistant for Pardus Linux that understands your voice or text commands and performs real actions on your desktop—securely and intelligently.

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PARDUS

PROBLEM

Interacting with a computer still relies heavily on manual input, context switching, and multiple applications. Existing assistants lack secure system integration, modularity, and full desktop action capabilities on Pardus.

SOLUTION

STN brings natural voice and text interaction to Pardus with an AI-driven, modular architecture and a secure execution layer, enabling users to accomplish tasks faster and safer.

HIGHLIGHTS

Secure by Design
All OS actions executed through MCP layer

Modular & Extensible
Agent-based architecture for easy expansion

Voice + Text
Natural interaction in Turkish and English

SYSTEM ARCHITECTURE

End-to-end secure workflow from user input to desktop action

Speech / Text Input
User speaks or types a command

→ **Whisper STT (Speech-to-Text)**
Converts speech to text

→ **Intent Classification (LLM)**
Understands intent and extracts parameters

→ **Agent Router (Orchestrator)**
Routes request to the appropriate agent

→ **MCP Security Layer (Modular Control Plane)**
Validates, authorizes and executes securely

→ **OS-Level Actions**
Real actions on Pardus desktop

- **Agents** (Weather, Mail, Calendar, Alarm, Launcher, Zoom, ...)
- **SQLite** Conversation Storage
- **PySide6** Desktop GUI
- **Logging & Monitoring** Centralized logs and audit trail

MCP SECURITY LAYER

All operating-system actions are executed through the MCP (Modular Control Plane) which provides:

Application Whitelisting
Only approved applications can be executed

Secure Process Execution
Processes run with controlled permissions and validation

Centralized Logging
All actions are logged in a tamper-evident way

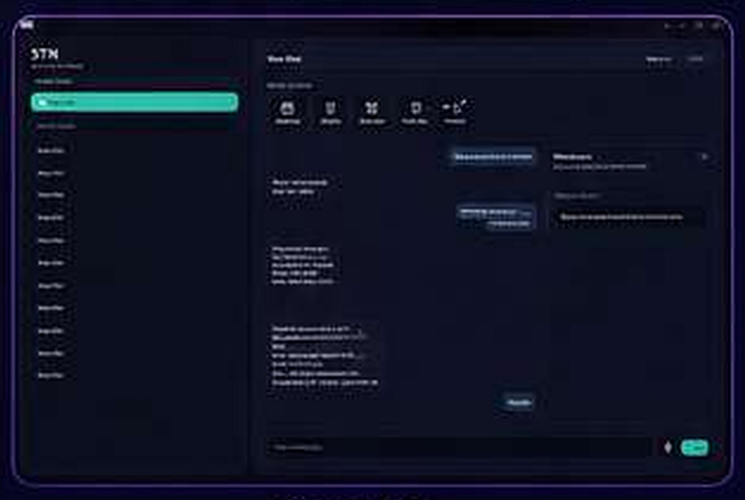
Auditable Actions
Every action is traceable and reviewable

Security First. Always.
STN ensures your system remains under your control—safely.

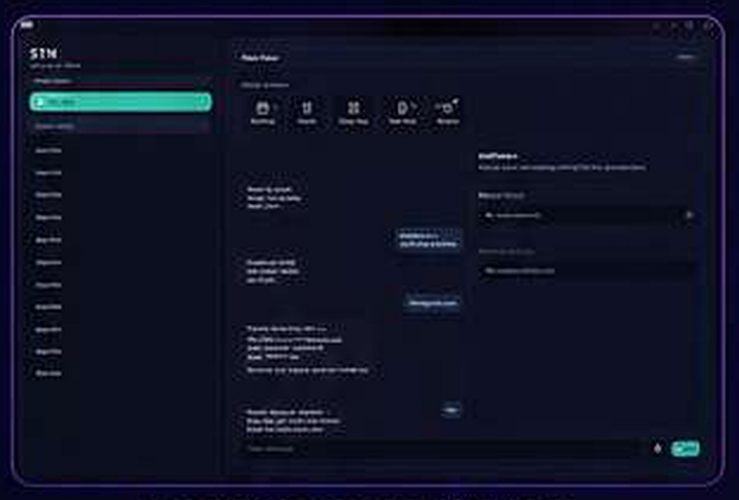
CORE FEATURES

- **Voice-Controlled Chatbot** — Natural conversations with AI
- **Weather Assistant** — Real-time weather information
- **Alarm Setter** — Set, list and manage alarms
- **Mail Assistant** — Send, read and manage emails
- **Zoom Meeting Scheduler** — Schedule and manage Zoom meetings
- **Secure App Launcher** — Launch approved applications securely
- **TR / EN Support** — Turkish and English language support
- **Real-time Desktop Interaction** — Perform real actions on your desktop

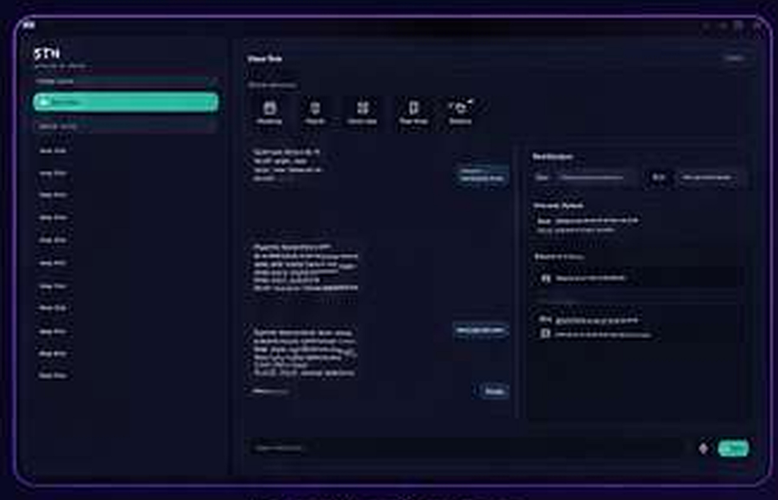
GUI PREVIEW (SCREENSHOTS)



Chat Interface



Extended Conversation & Artifacts



Scheduling & Actions

TECHNOLOGIES USED

- Whisper (openai/whisper-large-v3) — Speech Recognition
- LLM (DeepSeek / OpenAI Compatible) — Intent Classification
- Python 3, PySide6 — Application & GUI
- SQLite — Conversation Storage
- MCP (Modular Control Plane) — Secure Execution Layer
- Pardus Linux — System Integration

RESULTS & VALIDATION

- Accurate intent classification for diverse commands
- High speech recognition accuracy in TR/EN
- Secure execution verified through MCP policies
- Stable real-world task execution on Pardus
- Comprehensive logging and audit trail
- Modular design validated with multiple agents

95%+	90%+	100%	7+
Intent Accuracy	STT Accuracy	Secure Execution	Integrated Agents

FUTURE WORK

- More agents (files, notes, reminders, system monitor)
- Multi-modal input (voice + vision)
- Personalization and user profiles
- Cloud synchronization and backup
- Plugin marketplace for community agents
- Mobile companion application

Your voice. Your assistant. Your Pardus.

Learn more: senior.ceng.metu.edu.tr/2026/STN