

# SANDESH CHAPAGAIN

Infrastructure Engineer · Co-founder · Rome, Italy [sendmailtodex@gmail.com](mailto:sendmailtodex@gmail.com) · (+39) 344 594 6149 · Open to relocation

## PROFILE

Co-founder and sole engineer of Ditch — a production live-streaming platform with a custom RTMP relay engine, WebRTC participant pipelines, canvas compositor, and real-time multi-platform broadcast. Built the complete technical stack from scratch while enrolled in Engineering Sciences at Tor Vergata. Accepted into Startup Lazio 2026. Looking for early-stage infrastructure and product engineering roles.

## PROJECTS

### Ditch — Cross-Platform Live-Streaming Architecture

Jan 2025 – Present

[Co-founder & Sole Engineer](#) · [Startup Lazio 2026](#) · [Tor Vergata](#)

- ▶ Custom RTMP relay engine in Node.js: one browser ingest fans out simultaneously to YouTube, Twitch, Kick, and TikTok Live via ffmpeg tee muxer (onfail=ignore keeps surviving destinations running if one drops). Stream encoded once, pushed everywhere.
- ▶ Canvas compositor at stable 30fps with tab backgrounded — Web Worker frame timer (Workers bypass browser throttling) + Breakout Box API (MediaStreamTrackProcessor / MediaStreamTrackGenerator) + VideoFrame compositing. Layout adapts dynamically: solo, side-by-side, split-row, 2x2 grid.
- ▶ Real-time server: Socket.io handling unified chat aggregation from all connected platforms, participant signaling, and live session state broadcast to all viewers.
- ▶ Backend: Fastify REST API, Supabase Postgres (6 tables, custom triggers, RLS policies), participant state machine (waiting → approved → live → removed), server-side RTMP credential management.
- ▶ Monorepo: Turborepo + pnpm, 4 apps (web, api, realtime, relay), 2 shared packages (types, db). Frontend on Vercel, API / realtime / relay on Railway.

Next.js TypeScript Fastify Socket.io WebRTC Agora SDK ffmpeg Canvas API Web Workers Supabase Railway  
Turborepo

### RTMP Stream Tools — Internal CLI Toolkit

2025

[Built during Ditch relay development](#)

- ▶ rtmp-probe: wraps ffprobe to inspect codec, bitrate, resolution, and FPS of any live RTMP stream.
- ▶ loopback-broadcaster: pushes a synthetic test stream (color bars + timecode overlay, or a video file) to any RTMP endpoint via ffmpeg — full relay pipeline testing without a live browser session.
- ▶ stream-health: pings RTMP destinations on an interval, logging reconnect events. Used daily during backend development.

Node.js TypeScript ffmpeg Node Media Server Commander.js

### WebRTC from Scratch

2024 – 25

[Peer-to-peer video calling without SDK dependencies](#)

- ▶ Implemented ICE negotiation, STUN/TURN, and SDP offer/answer exchange in vanilla JS with a Node.js signaling server — no Agora, no Twilio.
- ▶ Key finding: most WebRTC connection failures trace to STUN misconfiguration. Directly informed Ditch's WebRTC architecture and reduced participant join failures in production.

JavaScript WebRTC Node.js STUN/TURN WebSockets

### BarcaBuzz — Football Content Community

Aug 2022 – Jun 2023

[Co-creator & Growth Lead](#)

- ▶ Grew to 100K+ followers organically in under 10 months, zero paid spend.
- ▶ Built a structured content pipeline: per-post tracking, A/B testing across format variables (hook, caption length, thumbnail, posting time), engagement feedback loops fed directly back into content decisions.
- ▶ Key insight: save rate predicts long-tail reach better than immediate engagement. Optimizing for the right metric changes what you build.

Content Systems Analytics Audience Growth

## WORK EXPERIENCE

## Network Support Intern

Jun 2024 – Nov 2024

[Intrasoft Networking Solutions](#) · [Lalitpur, Nepal](#)

- Diagnosed and resolved network connectivity issues across client systems; monitored performance using Wireshark and Nagios; configured routers, switches, VoIP phones across multiple sites.

## Marketing & Growth Manager

Jul 2023 – Jun 2024

[Pathik Gyan Niketan](#) · [Kathmandu, Nepal](#)

- Managed digital presence across Facebook, Instagram, and TikTok; ran Meta Ads and Google Ads campaigns with ROI tracking via Google Analytics.

## EDUCATION

### Bachelor in Engineering Sciences

Dec 2024 – Present

[Università degli Studi di Roma Tor Vergata](#) · [Rome, Italy](#)

- Mathematics · Physics · Electronics · Computing · Control Systems · Mechanics

### Fundamentals of Digital Marketing

Jan – Feb 2023

[Google Skillshop](#) · [Remote](#)

### School Leaving Certificate

Aug 2020 – Jul 2022

[Valmiki Shiksha Sadan](#) · [Bharatpur, Nepal](#)

## TECHNICAL SKILLS

### LANGUAGES

JavaScript (ES6+) · TypeScript · HTML5 · CSS3 · Python (foundational) · Golang (foundational)

### REAL-TIME

WebRTC · RTMP · ffmpeg · Agora Web SDK · Node Media Server · WebSockets

### FRAMEWORKS

Next.js · React · Node.js · Fastify · Tailwind CSS · Express

### INFRA

Docker · Supabase · Railway · Vercel · Git · WSL2/Ubuntu · Turborepo

### NETWORKING

TCP/IP · Wireshark · Nagios · Windows Server · Active Directory

### ANALYTICS

Google Analytics · Meta Ads Manager · Google Ads

## LANGUAGES

Nepali (Native) · English (C2) · Hindi (C2) · Italian (B1)