

# FRANCESCO GIORGIO DI FRANCO

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## EDUCATION

**Università degli studi di Catania** Catania, IT  
MS Computer Science - Distributed Systems and Security, Grade: 110/110 2016 - 2020

**Università degli studi di Catania** Catania, IT  
BS Computer Science 2011 - 2016

## WORK EXPERIENCE

**ParkSmart s.r.l.** Catania (remote)  
*Tech Lead* Nov 22 - Present

- Design and development of psm-detector: an AI application made using Python, GStreamer, Nvidia Deepstream, and YoloV8 to do real-time detection.
- Design and development of the new edge data pipeline using Triton server and redis
- Design and development of the edge monitoring system using grafana agent
- SRE of the parksmart-platform: maintaining and configuring required infrastructure using terraform: VPC, EKS (Kubernetes, Flux, Istio, External-dns, cluster-autoscaler, let's encrypt, Grafana agent), Route53

**Hopin l.t.d. (StreamYard)** London (remote)  
*Senior Backend Engineer (Video)* Oct 2020 - Nov 2022

- Design and development of Livestream-platform highly scalable and highly available RTMP proxy to receive all customer streams and distribute using AWS IVS and MUX. The platform was made of a RestAPI interface built using TypeScript (TwirpTs + Express), gRpc, and AWS DynamoDB. The RTMP-proxy was built using Nginx, Nginx-RTMP, NodeJs, and ffmpeg. The platform was deployed in multiple regions with an active passive failover strategy using AWS Route53.
- Development of MTS (Media Transform Service): a service that exposes RestAPIs to process video (transcode, convert to HLS, captioning, trimming)
- Development of MAR (Media Asset Registry): a service for VOD (consume MTS APIs and distribute generated HLS using AWS Cloudfront)
- Development of Mixer: a web page recorder built using Puppeteer (chromium), WebSockets, and FFmpeg.
- SRE of the livestream-platform: maintaining and configuring required infrastructure using terraform: VPC, EKS (Kubernetes, Flux, Istio, External-dns, cluster-autoscaler, let's encrypt, Datadog agent, OT collector), Route53

**ParkSmart s.r.l.** Catania  
*Full Stack Developer* Oct 2015 - Oct 2020

- Lead Backend Developer. Designer and developer of highly scalable and highly available microservices application, built in a hybrid architecture cloud-edge, to deliver real-time geolocated events to users, and manage edge devices and payments from users.
- Fron tEnd Developer. Developer of a web dashboard to manage all events and devices
- Tech stack: ReactJS, Socket.io, Nodejs, MongoDB, AWS (S3, Lambda, IoT, DynamoDB, EKS), Kubernetes, GitlabCI.

**Vicosystems s.r.l.** Catania  
*ML/BE Developer consultant* Sept 2017 - Oct 2020

- Development of an audio system for rainfall classification. Convolutional neural networks for audio classification of rainfall, processing audio signal as a 2D signal with Pytorch, PyAudio, Numpy, Pandas, RaspberryPI mod 3B+, and Amazon Web Services.
- Development of a platform to manage smart intercoms and do video calls when you are away using NodeJs, Python (Flask), Janus Web RTC Gateway, and Amazon Web Services.
- Backend Developer. Developed a platform to manage drones, copters, and rovers using ROS and NodeJs

## SKILLS

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Programming Languages:	TypeScript, Javascript, Python, C, Dart, Go
Databases:	PostgreSQL, Mysql / MariaDB, MongoDB, Dynamo DB, Redis
Frontend:	ReactJS, Angular 14+, Flutter, Vue, HTML5/CSS
Media frameworks / tools:	Gstreamer, Ffmpeg
Cloud Technologies:	AWS, GCP, Kubernetes
AI:	Kubeflow, Pytorch, Numpy, Pandas, Nvidia Deep Stream
DevOps:	GitlabCI, GitHub Actions, FluxCD, ArgoCD
Monitoring:	Grafana, Prometheus, Tempo, Loki, Datadog
Infra:	Terraform, Kustomize, Helm, Kustomize, Terragrunt, Atlantis

## PUBLICATIONS AND OPEN SOURCE CONTRIBUTIONS

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### **SMILE: Smart Monitoring IoT Learning Ecosystem**

[https://www.researchgate.net/publication/339818489\\_SMILE\\_Smart\\_Monitoring\\_IoT\\_Learning\\_Ecosystem](https://www.researchgate.net/publication/339818489_SMILE_Smart_Monitoring_IoT_Learning_Ecosystem)  
February 2020, International Journal on Advanced Science Engineering and Information Technology 10(1):413

### **A Convolutional Neural Networks Approach to Audio Classification for Rainfall Estimation - IEEE Conference Publication**

<https://ieeexplore.ieee.org/document/8924399>  
September 2019, Technology and Applications (IDAACS), 2019 10th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems

### **BHJL13- Efficient Cryptosystems From 2k-th Power Residue Symbols**

<https://github.com/cicciodifranco/2k-power-residue>  
An implementation in C of BHJL13- Efficient Cryptosystems From 2k-th Power Residue Symbols

### **Egocentric shopping cart localization (Supermarket indoor localization) Pytorch, Numpy**

Convolutional Neural Networks (CNN: Densenet, Alexnet, Squeezenet) to classify supermarket aisles, and predict coordinates by linear regression. Results: Accuracy of 87% on the test

### **HPC SHA-1 C, Nvidia CUDA**

Distributed hashing algorithm based on SHA-1 using CUDA

### **lucasrochagit/nest-mongo-query-parser Typescript, MongoDB**

<https://github.com/lucasrochagit/nest-mongo-query-parser>  
Add regex search

### **RethinkRobotics-opensource/rosnodejs Javascript, ROS**

<https://github.com/RethinkRobotics-opensource/rosnodejs>  
Add udp support to ROS-NodeJs client

### **italia/spid-passport (archived) Javascript, PassportJS**

<https://github.com/italia/spid-passport>  
Full implementation of passport auth middleware for Italian GOV SAML2 (SPID)