

# Nico Orrù – Principal Programmer

Liverpool, United Kingdom – +44 (0)7769 891221  
nigu.orrù@gmail.com – <http://itadinanta.net>

## Overview

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### Profile

Versatile, resourceful, polyglot, veteran developer/engineer/programmer experienced in networked console games and immersive applications, as individual contributor and team and tech lead.

### Objectives

My main interests lie in engineering reliable, maintainable, scalable, distributed systems of heterogeneous nature.

My favourite domains include networked games and digital entertainment, in which I can play production and R&D roles in technical areas, ranging from the likes of hands-on software engineer, programmer, problem solver, up to architect, tech, project and team lead, as required by the project at hand.

## Published Titles

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- **Tom Grennan VR** – PSVR – compositing tools and technology (VFX)
- **Wipeout Omega Collection** – PS4 – online consultant
- **Joshua Bell VR** – PSVR – additional audio support
- **DRIVECLUB VR** – PSVR launch title – principal programmer acting producer
- **DRIVECLUB Bikes** – PS4/PSN – server lead
- **DRIVECLUB PS+ Edition** – PS4/PSN – server lead
- **DRIVECLUB** – PS4 – server programming, webservice client
- **SmartAs** – PSVITA – leaderboards, server infrastructure, webservice client
- **Wipeout 2048** – PSVITA “launch” title – leaderboards, server programming, server maintenance, webservice client
- **MotorStorm Apocalypse** – PS3 – client/server additional programming, networking
- **MotorStorm Arctic Edge** – PSP – server lead
- **Wipeout HD Fury DLC** – PS3/PSN – game lobby, leaderboards
- **MotorStorm Pacific Rift** – PS3 – additional server programming
- **vip.motorstorm.com** – official MotorStorm community portal – project technical lead
- **Wipeout HD** – PS3/PSN – game lobby, web community, leaderboards
- **Wipeout Pulse** – PSP – game lobby in-game community, web community ([www.wipeout-game.com](http://www.wipeout-game.com))
- **Formula One Championship Edition** – PS3 launch title – lobby and front-end, community, leaderboards, build tools
- **F1 06** – PS2/PSP – internal build tools, unreleased online services
- **Wipeout Pure** – PSP launch title – plug-ins, DLC infrastructure, DLC playstation.com integration
- **Formula 1 2005** – PS2 – online testing tools

## Knowledge

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### Programming and scripting languages

- **Recently:** C++, Go, Bash, PowerShell, Python, C#, Lua, Rust
- **Historically:** Elm, F#, Ruby, Erlang, C, JavaScript, Scala, Java, SQL, Julia, GLSL, ShaderLab, Pascal/Turbo Pascal/Delphi, Assembly (80x86, Z80, 6510, PowerPC), PHP, Perl, BASIC/Visual BASIC/VBA dialects, MATLAB, Emacs LISP, FORTRAN, XSLT, various DSLs

### Platforms and targets

- **Recently:** PlayStation platforms (PS5, PS4, PSVR, PSVITA, PS3, PSP, PS2), MS Windows, Linux (Ubuntu/Debian/Devuan, CentOS/RedHat/FC, Amazon Linux, other)
- **Historically:** Unix (Sony/News OS, Solaris, SysV, HP-UX, AIX), Arduino, Apple macOS, Android, Other embedded systems (Nortel, Cisco)

### Tools and methodologies

- **Git, Perforce**, Subversion, CVS, AccuRev, AlienBrain, Mercurial
- Cross-platform and embedded development (PC/Console/Mobile/MCU, Linux/Windows)
- **Proprietary engines, Unity, Unreal Engine**, ECS model
- **Amazon AWS**, EC2, VPC, EKS/Kubernetes, Docker, OpenStack/Eucalyptus, Google AppEngine
- SONY proprietary networking technology: **PSN**, PSS Game Analytics, OTG Turbine, sceRudp (legacy: SCE-RT, Medius, DME, SVO, DTE, ActiveCommunity, OTG-S/C3, OTG Telemetry), replication model, rollback model
- **TCP/IP, HTTP, UDP**, Berkeley sockets, TLS, **rUDP**, other internet protocols
- **OOP/OOD**, FP, Actor model, Guava, Akka, OTP
- **Agile** (SCRUM, Kanban and Lean variants), **TDD**, BDD
- **CI** with Jenkins/Hudson, Travis CI, Sbt, Ant, Maven, Nexus, Bintray, Ivy, CruiseControl, SCEE BuildServer, SIE Imogen; exposure to Argo CI

- **JetBrains IDEs** (Rider, CLion, PyCharm, RustRover etc...), **Visual Studio**, ReSharper, Visual Assist, **Eclipse** JDT, Scala IDE, CDT, RustDT, Corrosion, ErlIDE, Emacs, Visual Studio Code, NetBeans IDE, Xcode, MonoDevelop, Delphi/Borland RAD tools, Unix build tools, Cmake, premake, Android ADK
- **IaC**, Chef, Ansible, automated provisioning and configuration; exposure to Terraform, CloudFormation, CDK, Helm
- VirtualBox, Vagrant, VMWare, FreeVSD, WSL
- Apache Cassandra, CouchDB, SimpleDB, NoSQL – exposure to DynamoDB, ElasticSearch, Redis
- Tomcat, Jetty, Netty, JBoss AS, Jetspeed2, Spray, Magnolia CRM, Google Protocol Buffers, Thrift, JMX, SNMP, GridGain, JGroups
- Apache2, Haproxy, Postfix, Sendmail, Qmail, freeRadius, iptables, BIND, other
- RabbitMQ/AMQP, JMS
- PostgreSQL, MySQL, Oracle, Sqlite, OR mapping tools (Hibernate, iBatis, EJB, JDO)
- Automated test tools (SIE DTE, other proprietary technology)
- Nuke (VFX and film editing software)
- Jira, Confluence, Miro, GitHub, Helix Swarm, MS Office, Outlook, Teams, Google Docs
- Cross-team on-site/off-site coordinated development and deployment across multiple timezones

## Other interests and experience

- Team interactions and leadership, methodologies and processes, industrial automation
- Computer graphics
- Audio and DSP
- Mixed Windows-Linux/UNIX IP-based networks
- Civil engineering/CAD environment and water resources

## Personal

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### Qualities and traits

- Open-minded, versatile and fast at learning
- Resourceful and tenacious problem solver
- Extremely goal and outcome oriented
- Open and honest communicator
- Enthusiastic yet able to manage risk in challenging projects
- Creative and willing to share ideas and solutions

### Nationality

Dual national British and Italian. Born in Cagliari (Sardinia, Italy), naturalised British in 2013

### Languages

- Italian and English: fluent
- Spanish: basic
- Japanese: rudimentary

### Availability

At risk of redundancy since PlayStation London Studio is classified as “at risk of closure”; under consultation until 31/05/2024. Projected earliest start: June 2024

### Relocation/Commuting

- Working from home in Liverpool, full remote, connected to the SIE London Studio office via Cisco Meraki hardware VPN
- Prioritising roles offering in-office or hybrid model (3-4 days a week) in Liverpool central but will consider full remote roles in UK and EU

### Driving licence

UK full driving licence

### Extra-curricular interests

Videogames, technology, woodworking, international politics, photography, travelling, animation and anime , writing and poetry, piano and keyboards, western and eastern martial arts, baroque music, comics, books and literature, trying new things

# History

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## 2021-2024

**Principal Network Programmer** at Sony Interactive Entertainment PlayStation London Studio (remote) – at risk of closure

- Server architecture and microservices development (Go) on AWS EKS – following CNCF principles and guidelines
- Client netcode to support rollback-based P2P cross-platform (PC/PS5) communication
- SIE proprietary relay server maintenance, cross-compilation and deployment (EKS, Agones), latency optimisation
- Evaluation and integration of SIE and third party libraries and frameworks into in-house engine (PlayFab, etc.)
- Engine runtime maintenance, bug fixing, utility and test features (logging, configuration, TSAN, ASAN, Test Coverage, Static Analysis)
- Headless lightweight game runtime and scripted input emulation for unattended, automated, test bots

**Unreleased titles:** Unannounced co-op multiplayer modern fantasy combat game

## 2017-2021

**Principal Programmer at Sony Interactive Entertainment PlayStation Studios** (formerly Worldwide Studios) IVT - Immersive Video Technology (Liverpool, UK)

- Stereoscopic and pseudo-volumetric video and still capture (custom camera sets) and replay of live subjects on PSVR
- VFX image processing and video compositing tools for PSVR real-time live action media
- Scientific data processing and visualisation in VR (R&D)
- Legacy Driveclub game servers maintenance and operations, online consulting to internal teams

**Released titles:** Joshua Bell VR, Wipeout Omega Collection, Tom Grennan VR

**Announced title:** Climate Station, an immersive climate-change explainer and data visualisation app (R&D and prototypes)

**Patent applications (as co-inventor):** P115798US, P116259US, P116260US, P117350US, P118094US

## 2016-2017

**Principal programmer** at Sony Interactive Entertainment Worldwide Studios ITG - Immersive Technology Group (Liverpool, UK)

- Maintenance and development of the Driveclub/Driveclub VR franchise servers
- Research on Social VR technology and applications
- Experimental hardware for VR applications

**Released games:** DRIVECLUB VR

## 2014-2016

**Online Server Lead** at Sony Computer Entertainment Europe Evolution Studios (Runcorn, UK), terminated due to Evolution Studios closure

- Resolve structural issues which led to Evolution Game Server's severe performance problems at launch
- Plan, design and develop server strategy and platform
- Facilitate and organize co-development of online services with SCEE internal teams and Third parties
- Bug fix, maintain and improve Driveclub/Driveclub PS+ edition servers

**Released games:** DRIVECLUB Bikes, DRIVECLUB PS+ Edition

## 2012-2014

**Principal Online Server Programmer** at Sony Computer Entertainment Europe Evolution Studios (Runcorn, UK)

- Develop components of the studio's custom game server platform, Evolution Game Server for Driveclub

**Released games:** DRIVECLUB

## 2012

**Lead Server Programmer** at Sony Computer Entertainment Europe Studio Liverpool (UK); terminated due to Liverpool Studio closure

- Responsibility for all strategy, design and R&D of server/back-end technology
- Wipeout 2048 servers maintenance, troubleshooting

## 2010-2012

**Senior Server Programmer** at Sony Computer Entertainment Europe OTG - Online Technology Group (London, UK)

- Internal SONY studios expert advice as consultant
- Develop customized server-side solutions for internal studio projects
- Research and develop reusable components and services for integration within multiple game titles
- Facilitate technology and knowledge sharing
- Evaluate, adopt and integrate third party technologies
- Advocate adoption of industry best practices in an agile environment
- Support productionisation and post-launch stages of Online games

**Released games:** Wipeout 2048 (Studio Liverpool), SmartAs, (XDEV/Climax)

## 2004-2010

**Senior Programmer** at Sony Computer Entertainment Europe Studio Liverpool (UK) with a specialization as a Server Programmer

- Evaluate, adopt and integrate third party technologies and technology prototypes
- Coordinate the SCEE Northwest Studio Server Group reporting to the SCEE Northwest Studio Group Online Lead
- Mentor junior staff
- Act as the deputy Online Lead in the lead's absence
- Act as the point of contact between game teams and server deployment, game integration and production teams off-site
- Offer consultancy and support on all aspects of online game development to internal and external development teams
- Develop and dimension reliable and scalable systems for production-level game servers, from design to production
- Develop client/server technology for PS3 and PSP games
- Develop game community websites for the SCEE Northwest Studio Group franchises (MotorStorm, Wipeout) as the technology lead

**Released titles:** MotorStorm Arctic Edge, Wipeout HD Fury DLC, MotorStorm Pacific Rift, vip.motorstorm.com. Wipeout HD, Wipeout Pulse, www.wipeout-game.com, Formula One 2006 /Formula One Championship Edition, Wipeout Pure, Formula 1 2005

## 2004

**Lead developer** at OptiOne Srl (Villacidro, Italy)

- Main developer of OptiCAD, a CAD/CAM/optimisation software suite for specialized industrial glass -cutting machines

## 2001-2003

**Experienced analyst, developer, system and network manager** at Energit (Cagliari, Italy) during start-up phase

- E-commerce, customer care, CRM
- Products and services R&D
- Network/server administration, 24/7 1st and 2nd line emergency support, troubleshooting, TCP/IP networking
- Web hosting, domain registration

**Notable products:** Energit Areaserver – domain registration, virtual and dedicated hosting, Energit Virtual Power Plant

## 1998-2000

**Founder** at DOT Srl (Cagliari, Italy). Engineering, environmental and water resources, graphics/CAD. **Lead developer** for GridProcessor; CAD/data operator and programmer on engineering -related projects

- Network and system administration at customer's sites
- Web programming and web design, local ISP services
- Engineering CAD applications, water resource management applications. Lead developer of the "Backrain" (self-funded) software project to extract synthetic river networks from a digital elevation model
- Computer science training classes to 6th and 7th grade students

## 1997

**Freelance part-time programmer;** civilian service

- Compulsory civilian service (in substitution of military service) at the Juvenile Prison of Quartucciu (Italy), and at the Juvenile Justice Centre of Sardinia. Administrative assistant and office automation specialist
- Developer of Profili Win, a CAD application tailored to aqueduct and water pipe projects design ( part-time)
- Database application for maintenance of aluminium production tools, for Alcoa (part-time)

## 1993-1996

**Programmer** at Ente Autonomo del Flumendosa (water resources management, engineering, scientific, physics), at the *New Survey about the Surface Hydrology of Sardinia*). Freelance web and database app developer for small local businesses

## 1992

**High school diploma** – Industrial Technical Institute - Computer Science

## 1990-1991

**Freelance junior analyst programmer**, part-time. Developed bespoke MS-DOS database application for the special delivery of clothes, developed bespoke MS-DOS CAD application for aluminium cut optimization of window frame designs

*References will be provided on demand*

## Education

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### 2000

**Diploma Universitario in Informatica** from the University of Cagliari (Italy), a three -years university-level degree in Computer Science with a final mark of **70 /70 cum laude**

### 1992

**Diploma di Maturità Tecnica Industriale specializzazione Informatica** obtained from *Istituto Tecnico Industriale "Dionigi Scano"* (five years technical high school, specialisation in Computer Science, Italy) with a mark of **60/60** in the final exam

*Last update: March 13, 2024*