

Marius-Constantin Dinu

Dipl.-Ing. Dr. techn., EMBA, BSc

Chief AI Officer | Head of AI Research | AI Technical Lead

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scholar.google.com/citations?user=vh39WvYAAAAJ



PROFILE

AI research leader and founder who builds systems that hold language models to a specification instead of trusting their output. Ph.D. in Artificial Intelligence (with distinction, JKU Linz) under Sepp Hochreiter; author of SymbolicAI, the open-source neuro-symbolic framework with 1,745 GitHub stars, published at CoLLAs and cited publicly by Gary Marcus, IBM and Microsoft AI leadership. Founded ExtensityAI and scaled it from zero to over EUR 1M in revenue — profitable inside its first year of trading — backed by a EUR 767k pre-seed, and was named by Sifted / Financial Times among Europe's top 11 AI startups. Publishes at ICLR, NeurIPS, ICML and CoLLAs (380 citations, h-index 8) while personally architecting the production platforms that turn the research into audited, cost-bounded software.

CORE COMPETENCIES

- **AI & Research Leadership:** Research strategy & roadmapping; Building international AI/ML teams; Investor & grant fundraising; IP strategy; EU AI Act & AI governance; Technical due diligence
- **Neuro-Symbolic & LLM Systems:** Agent orchestration; Contract-mediated generation; Retrieval-augmented generation (RAG); Tool use & function calling; Constraint solving (Z3, SymPy, WolframAlpha); Knowledge graphs; Formal verification
- **Model Training & Alignment:** Reinforcement learning (PPO, DPO, GRPO, RLVR); Fine-tuning (LoRA); Continual learning; Unsupervised domain adaptation; Causal inference & do-calculus; Evaluation & benchmark design
- **Platform & Production:** Python; TypeScript; Java; C#/.NET; C++; FastAPI; Next.js; React; PostgreSQL; Redis; Docker; Terraform; Azure; GitHub Actions; OpenTelemetry; RBAC & capability policy

EXPERIENCE

Research | Alpha Omega Labs

Austria | Jul 2026 – Present

- Architect and principal engineer of **Cortex**, a self-hostable control plane that lets an organisation run AI coding agents from ordinary chat channels under enforced policy with a full audit trail — roughly 182,600 lines of first-party Python and TypeScript across 53 backend service modules and a 17-area React operations console.
- Designed its two-plane authorisation model — 15 control surfaces × 4 account groups × per-runtime capability policies — so a lower-privilege human can safely drive a higher-capability agent without privilege escalation, backed by an append-only audit log and TTL-scoped cross-organisation delegation.
- Architect of **omegaXiv**, a nine-service platform on which AI agents run a scientific investigation end to end: plan it, execute code in isolated sandboxes, self-check against quality contracts, and publish a reviewable paper.
- Built spend governance directly into the run lifecycle — payment pre-authorisation before dispatch, settled by capture-or-cancel through a single idempotent finaliser — so an autonomous run cannot silently burn budget.

Founder & Chief Executive Officer | ExtensityAI FlexCo

Wels, Austria | Mar 2023 – Jun 2026

- Set the technical thesis and architected the core system: treat the language model as a *semantic parser* that emits typed expressions, then execute those expressions on a symbolic layer where every step is checkable. Implemented as contract-mediated calls — pre- and post-conditions bound to schemas, deterministic validators, bounded automatic repair before escalation — which is what made multi-step generation reliable enough to sell.
- Delivered pipelines measured at up to **300× more compute- and cost-efficient** than comparable conventional LLM approaches on target workloads, by routing deterministic sub-tasks to solvers rather than re-prompting a large model.
- Scaled the company from zero to **over EUR 1M in revenue**, profitable inside its first year of trading, on a **EUR 767k pre-seed**; also initiated a six-figure quantum-computing grant with PlanQC.
- Recruited and led an international team across AI/ML research, software engineering and business intelligence; owned the research agenda, the engineering standards and the commercial roadmap.

AI Research Director & Advisor | Atlas

Vienna, Austria | Apr 2023 – Dec 2024

- Directed the applied research agenda across deep learning and reinforcement learning, and advised leadership on model selection, build-versus-buy and deployment strategy.
- Built production-facing prototypes in Python using deep and recurrent architectures, taking them from problem framing through evaluation to hand-off.

Research Scientist (Ph.D.) | Johannes Kepler University — LIT AI Lab

Linz, Austria | Sep 2019 – Sep 2024

- Solved hyper-parameter selection in *unsupervised* domain adaptation — where no target labels exist to validate against — by extending weighted least squares to vector-valued deep networks and proving the aggregate's target error is asymptotically within a factor of two of the unknown optimum. Beat DEV and IWV on all seven benchmarks. **ICLR 2023 Oral (notable, top 5%)**.
- Derived a justified regularisation-parameter rule for distance-regularised domain adaptation by recasting it as a regularised ill-posed inverse problem and applying the balancing principle — admitting, unlike prior art, source and target distributions with disjoint supports (**NeurIPS 2021**).
- Co-developed Align-RUDDER, replacing an LSTM credit-assignment model with a multiple-sequence-alignment profile model borrowed from bioinformatics, enabling reward redistribution from as few as two demonstrations; first method in its class to mine a diamond in Minecraft **ObtainDiamond (ICML 2022)**.
- Defined SACo and TQ, two empirical measures of dataset exploration and exploitation that predict which offline-RL algorithm family will succeed on a given dataset (**CoLLAs 2021**).

Senior Machine Learning Researcher | Dynatrace Research

Linz, Austria | Oct 2021 – Mar 2023

- Built deep learning and NLP prototypes at the LIT Open Innovation Center, working across research and product to move observability capabilities from paper to pipeline.

Earlier Roles | Imagine Kara LLC · CELUM · Siemens Corporate Research · Kontron

Austria / USA | 2010 – 2019

- Founder & Software Architect, Imagine Kara LLC** (May 2018 – Dec 2018): Cloud masternode platform for automated coin hosting.
- Data Scientist, CELUM** (Oct 2016 – Aug 2019): Deep-learning image classification for digital asset management.
- Applied Research Scientist, Siemens Corporate Research** (Mar 2016 – Sep 2016): Handwritten-character recognition across mobile platforms.
- Software Architect & Product Manager, Kontron** (Dec 2010 – Mar 2016): Led an international team building software for self-service coin-counting devices.

SELECTED SYSTEMS

Cortex — A governed control plane for AI agents

Alpha Omega Labs | Jul 2026 – present

- A private control tower that lets a company run AI coding agents from chat apps like Slack or Telegram — with rules about who may do what, a full audit trail, and one-click deployment of whatever the agents build.
- First-party code: 182,600 lines · Backend service modules: 53 · Python test functions: 643
- Two-plane authorisation: 15 control surfaces × 4 account groups × per-runtime capability policies, so a lower-privilege human can drive a higher-capability agent without escalation. Append-only audit log; TTL-scoped cross-organisation delegation.

omegaXiv — Autonomous research platform

Alpha Omega Labs | Jul 2026 – present

- An online platform where AI agents actually run a scientific investigation end to end — planning it, executing code in isolated sandboxes, checking their own work against strict quality contracts, and publishing a finished, peer-reviewable paper.
- Application code: 613,600 lines · Tests: 8,100 Python + 3,900 TS · Services: 9
- Designed the run engine: a deterministic render → turn → parse → validate → repair phase loop that binds every model output to a per-phase schema, classifies failures into a six-value verdict, and auto-repairs within bounded attempts before escalating to a human.

SymbolicAI — Open-source neuro-symbolic framework

ExtensityAI | 2022 — present

- An open-source framework that combines language models with mathematical solvers, so a complex task breaks into small steps that can each be checked for correctness instead of trusted.
- GitHub stars: 1,745 · Forks: 91 · Citations: 49
- Author and maintainer. Composes generative models with symbolic solvers over an expression graph, decomposing a complex task into small operations that are individually verifiable and recombinaible.

EDUCATION

Ph.D. (Dr. techn.), Artificial Intelligence | Johannes Kepler University

Linz, Austria | 2019 — 2024

Passed with distinction. Thesis: Parameter Choice and Neuro-Symbolic Approaches for Deep Domain-Invariant Learning. Advisor: Sepp Hochreiter.

Executive MBA, Economics | WU Executive Academy & UMN Carlson School

Vienna / Minneapolis | 2024 — 2026

M.Sc., Computer Science — Data Science | Johannes Kepler University

Linz, Austria | 2017 — 2019

Exchange Semester, Machine Learning | National Taiwan University of Science and Technology

Taipei, Taiwan | 2018 — 2019

B.Sc., Software Engineering | University of Applied Sciences Upper Austria

Wels, Austria | 2013 — 2016

SELECTED PUBLICATIONS

380 citations | h-index 8 | i10-index 8 (Google Scholar, 2026-08-04)

- **SymbolicAI: A Framework for Logic-Based Approaches Combining Generative Models and Solvers.** M.-C. Dinu, C. Leoveanu-Condrei, M. Holzleitner, W. Zellinger, S. Hochreiter. *CoLLAs*, 2024 .
- **Addressing Parameter Choice Issues in Unsupervised Domain Adaptation by Aggregation.** M.-C. Dinu, M. Holzleitner, M. Beck, H. D. Nguyen, A. Huber, H. Eghbal-Zadeh et al.. *ICLR*, 2023 — Oral — notable top 5%.
- **Align-RUDDER: Learning from Few Demonstrations by Reward Redistribution.** V. P. Patil, M. Hofmarcher, M.-C. Dinu, M. Dorfer, P. M. Blies, J. Brandstetter et al.. *ICML*, 2022 .
- **A Dataset Perspective on Offline Reinforcement Learning.** K. Schweighofer, A. Radler, M.-C. Dinu, M. Hofmarcher, V. P. Patil et al.. *CoLLAs*, 2022 — Equal contribution (first three authors).
- **The Balancing Principle for Parameter Choice in Distance-Regularized Domain Adaptation.** W. Zellinger, N. Shepeleva, M.-C. Dinu, H. Eghbal-zadeh, H. D. Nguyen et al.. *NeurIPS*, 2021 .

PATENTS, AWARDS AND RECOGNITION

- **Patent pending:** *Agent-Based Neuro-Symbolic Methodologies for Scientific Discoveries and Workflow Automation* — US 2026/0212154 A1; application 19/032,587; filed 21 January 2025; ExtensityAI FlexCo, Wels (AT).
- **Sifted / Financial Times — Europe's top 11 AI startups to watch** (2024). ExtensityAI named in the annual investor watch list.
- **ICLR 2023 Oral — notable top 5%** (2023). Addressing Parameter Choice Issues in Unsupervised Domain Adaptation by Aggregation.
- **Ph.D. passed with distinction** (2024). Johannes Kepler University Linz.
- **Author — The Inflection Point** (2025). On the shift from AI alchemy to verifiable, architecture-driven AI systems.

AFFILIATIONS

- AI Austria RL Community — team member; co-organiser of the International Reinforcement Learning Bootcamp (2nd edition, 2025).
- Distinguished Expert, Global Advisory Council of the Indian Society of Artificial Intelligence and Law (ISAIL-GAC).
- Founder of the "AI Is All You Need" research community on Discord, 450+ members; research outreach reaching 250,000+ views across X and LinkedIn.
- Open-source maintainer: SymbolicAI, and Lighter (dependency injection for PyTorch).

LANGUAGES

German (Native) | Romanian (Native) | English (Fluent (C1–C2))