

BURAK KARA

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SUMMARY

PhD in Computer Science (INRIA & Université de Rennes, 2026) with R&D focus on video delivery systems, multi-CDN content steering, and AI-driven media pipelines. Designed novel protocol extensions and led their transition from research prototypes to commercial streaming products. Active contributor to international standardization bodies (DASH-IF, SVTA, CTA-WAVE). 15 peer-reviewed publications across IEEE and ACM venues, 6 granted/filed patents. Track record of turning R&D innovation into production-grade systems through cross-functional collaboration in international industrial and academic settings.

SELECTED EXPERIENCE

Synamedia

Associate Software Architect – PhD Researcher

Mar 2023 – Mar 2026

Onsite – Rennes, France

- Designed and built PoCs for Content Steering (frequent CAT renewal, power efficiency-aware steering, edge cache switching) for IBC, NAB, and customer innovation days, leading to collaborations with Akamai, CastLabs, Bitmovin, and Orange.
- Led the transition from PoC to product; Quortex Switch, a commercial multi-CDN content steering product.
- Explored Media over QUIC (MOQ) and AI-driven live video understanding; a smart LLM-triggering pipeline for live delivery.
- Authored 10 papers and filed 3 patent applications; DASH-IF Excellence in DASH Award (Best Paper, ACM MMSys '24).
- Contributing member of DASH-IF, SVTA, CTA-WAVE, and Greening of Streaming working groups.
- Delivered 3 guest lectures on CDN for Master 2 students at ISTIC, Université de Rennes.

Nokia & Özyeğin University

Master's Thesis Researcher (Nokia-funded)

May 2020 – Sep 2022

Hybrid – Istanbul, Türkiye

- Researched 360-degree video streaming: viewport prediction, head-motion-aware ABR, and OMAF v1/v2 benchmarking.
- Developed head-motion-aware viewport margin algorithms that improved QoE in immersive video delivery.
- Published 5 papers (IEEE, ACM) and filed 3 patents in collaboration with Nokia Bell Labs.
- Teaching assistant for computer networks and multimedia systems courses.

EDUCATION

Inria & Université de Rennes – Ph.D. in Computer Science

2023 – 2026

Thesis: *Sustainability in Multi-CDN Streaming: Economic Drivers and Steering Strategies*

CIFRE Ph.D. (industry-funded) · Supervisors: Bruno Tuffin (Inria), Gwendal Simon (Synamedia)

Özyeğin University, Türkiye – M.Sc. in Computer Science

2020 – 2022

Thesis: *Enhancement of 360-Video Experience during Head Motion* · GPA: 3.96 / 4.00

Nokia-funded · Supervisor: Ali C. Begen

Özyeğin University, Türkiye – B.Sc. in Computer Science

2015 – 2020

Thesis: *HTTP Adaptive Streaming over Multiple Network Interfaces* · GPA: 3.62 / 4.00 · Supervisor: Ali C. Begen

PUBLICATIONS

Journal Articles

- Environmental Regulation in CDN Market: A Game-Theoretic Framework – *B. Kara, B. Tuffin, G. Simon*. [Under review](#).
- Could Head Motions Affect Quality When Viewing 360-Degree Videos? – *B. Kara, M.N. Akcay, A.C. Begen, S. Ahsan, I.D.D. Curcio, E. Aksu*. [IEEE MultiMedia '22](#)

Conference Papers

- Scaling the Cheer: Co-Viewing with Dual-Mode MOQ Transport – *A.B. Demir, M. Parlak, Z. Gurel, A.F. Zengin, A.C. Begen, and B. Kara* [ACM MMSys '26](#)
- Content Steering Beyond Multi-CDN: Intra-CDN Edge Cache Switching as a Use Case – *B. Kara, G. Simon*. [ACM MHV '26](#)
- MOQ-n-Roll: Live Sports Watch Parties – *A.B. Demir, M. Parlak, A.C. Begen, B. Kara, G. Simon*. [ACM MHV '26](#)
- Modeling Energy Regulations for CDN Economics – *B. Kara, G. Simon, B. Tuffin*. [ACM MHV '25](#)
- CDN Failure Management in Content Steering Multi-CDN System – *B. Kara, G. Simon*. [ACM MHV '25](#)
- Beyond Swiping through Short-Form Videos – *B. Kara, G. Simon, A.B. Demir, A.C. Begen, F. Agboma*. [ACM MHV '25](#)
- Power Efficient Multi-CDN Communication over Content Steering Server – *B. Kara, G. Simon*. [ACM MMSys '24](#)

- Dynamic Content Steering Services: How to Make Everyone Happy in a Multi-CDN World – *B. Kara, G. Simon*. [ACM MHV ‘24](#)
- Studying Green Video Distribution as a Whole – *B. Kara, G. Simon, B. Tuffin, J. Vieron, A.C. Begen*. [ACM GMSys ‘23](#)
- Quality Upshifting with Auxiliary I-Frame Splicing – *M.N. Akcay, B. Kara, A.C. Begen, S. Ahsan, I.D.D. Curcio, K. Kammachi-Sreedhar, E. Aksu*. [QoMEX ‘23](#)
- Benchmarking the Second Edition of the Omnidirectional Media Format Standard – *B. Kara, M.N. Akcay, A.C. Begen, S. Ahsan, I.D.D. Curcio, K. Kammachi-Sreedhar, E. Aksu*. [IEEE ISM ‘22](#)
- Rate-adaptive Streaming of 360-degree Videos with Head-motion-aware Viewport Margins – *M.N. Akcay, B. Kara, S. Ahsan, A.C. Begen, I.D.D. Curcio, E. Aksu*. [IEEE MIPR ‘22](#)
- Head-Motion-Aware Viewport Margins for Improving User Experience in Immersive Video – *M.N. Akcay, B. Kara, S. Ahsan, A.C. Begen, I.D.D. Curcio, E. Aksu*. [ACM MMAsia ‘21](#)
- HTTP Adaptive Streaming over Multiple Network Interfaces – *B. Kara, S. Ozturk, A.C. Begen*. [ACM MMSys ‘20](#)

PATENTS & FILINGS

- Edge Cache Server Switching with Content Steering – Filed 2025
- Content-Aware Mid-Stream Bitrate-Ladder Switching – Filed 2025
- Multi-CDN Communication over Content Steering Server – US12477189B2 (2023)
- Splicing Frames To Reduce Discarded Data In Adaptive Segmented Media – Filed 2023
- A Method, an Apparatus and a Computer Program Product for Media Streaming of Immersive Media – EP4505750 (2023)
- A Method, an Apparatus and a Computer Program Product for Video Encoding and Video Decoding – US12574579 (2022)

REVIEWING

IEEE Multimedia (2024, 2025), ACM TOMM (2026), ACM MMSys (2026)

HONORS & AWARDS

Best Paper – DASH-IF Excellence in DASH Award, ACM MMSys	2024
Türkiye MSc Merit Scholarship – TÜBİTAK	2020 – 2022
Full Merit Scholarship – Özyeğin University	2015 – 2022
Hackathon Winner – Vodafone TobiHack	2020

TECHNICAL SKILLS

Protocols & Standards: DASH, HLS, CMAF, SRT, RTMP, Content Steering, Common Access Token (CAT), Media over QUIC (MOQ), OMAF

Systems: CDN, Multi-CDN, ABR, QoE, edge caching, cloud-native architectures

Languages: Python, C++, JavaScript, TypeScript, Shell

Frameworks: React, Next.js, NestJS

Tools: Docker, AWS, CI/CD, Git, \LaTeX , Agentic AI development

Research: Academic writing, patent filing

LANGUAGES

English – Professional Proficiency

French – Beginner

Turkish – Native