# Bilge Kağan Pamuk

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## ● PROFESSIONAL SUMMARY

Unity Developer and Systems Engineer with 4+ years of hands-on experience building VR, WebGL, and simulation applications. MSc candidate in Health Informatics (GPA 4.00) at Hacettepe University with a BSc in Software Engineering. Experienced in full-stack Unity architecture, multiplayer networking (Photon Fusion 2), backend API integration (Firebase, REST), and hardware-software co-design (Arduino, CAN Bus, ESP32). Proficient in GitLab branch workflows, ScriptableObject-driven systems, Prefab/Addressables management, and cross-platform builds (Meta Quest,Hololens 2, WebGL, iOS/Android). Passionate about educational technology, gamification, automative, industry,and interactive scientific simulation.

## ● WORK EXPERIENCE

01/02/2023 – Current - ANKARA, TÜRKIYE

**UNITY DEVELOPER & RESEARCH ENGINEER** MEDEASOFT A.Ş

- Developed VR and WebGL builds in Unity (C#) for dental training, surgical planning, and anatomy education products; achieved 4.2-star ratings on Google Play and App Store with 2,000+ active users
- Architected multiplayer VR applications using Photon Fusion 2 ,Photon Voice 2, Meta Avatar SDK v40; led Fusion 1 → Fusion 2 migration for Meta Quest 3
- Integrated Firebase (Firestore, Auth, Realtime DB) for real-time student progress tracking, room management, and dynamic data synchronization
- Built modular, scalable Unity systems using ScriptableObjects, Prefab Management, and Addressables for content-driven gamified learning experiences
- Implemented REST API connections and async JSON data flows between Unity client and backend services; handled error management and QA test checklists within build pipelines
- Profiled and optimized builds using Unity Profiler and Sentry for performance debugging; maintained GitLab repositories with branch-based workflows
- Collaborated with UI/UX, content, and backend teams to integrate scientific exercises into interactive simulation modules
- Led technical documentation and presentations for TÜBİTAK 1507 and two 1501 R&D projects

01/11/2024 – 30/12/2025 - CAMBRIDGE, UNITED KINGDOM

**PRODUCT DESIGN ENGINEER** SIMUX DEFENCE

- Project: Aston Martin Lagonda, Designed Unity-based automotive HMI simulator for in-vehicle digital cockpit; integrated CAN Bus protocols for real-time vehicle telemetry
- Conducted eye-tracking studies (HP Reverb / VARJO) to analyze driver attention patterns, information hierarchy, and interaction flows; synthesized findings into actionable design recommendations
- Built HLSL shader effects and visual feedback systems for instrument cluster displays
- Established research-to-design feedback.

01/11/2023 – 02/04/2024 - AALSMEER, NETHERLANDS

**MOBILE APP DEVELOPER** SPEEDER SYSTEM

- Researched drone operator workflows to design intuitive tablet-based control interfaces in Unity; validated through iterative prototyping and observation
- Built product demo application showcased at Berlin Aerospace Fair; collected real-time feedback from aviation professionals

05/09/2022 – 01/02/2023 - ANKARA, TÜRKIYE

**APPLICATION DEVELOPER** AKGUN TECHNOLOGY

- Contributed to Unity-based simulation and game development projects within a cross-functional engineering team
- Gained foundational experience in real-time 3D development, version control workflows, and agile delivery

## ● KEY PROJECTS

2023 – 2026 - ANKARA, TÜRKIYE

**MORFO VR & MORFO MOBILE** Dental Morphology Learning Application

- Cross-platform dental morphology app targeting Meta Quest 3 (VR) and iOS/Android (mobile), built in Unity with C#
- Gamified exercise modules using ScriptableObjects, modular Prefab systems, and Addressables for dynamic content delivery
- Photon Fusion 2 multiplayer networking in Shared Mode with Meta Avatar SDK v40 and Photon Voice 2 integration
- Firebase backend for progress tracking and real-time sync; supporting academic paper under review at International Journal of Serious Games (IJSG)

2026 – Ongoing - ANKARA, TÜRKIYE

**DIGITAL TWIN MIXED REALITY SYSTEM** Arduino Hardware Control Panel

- Mixed Reality application (Meta Quest 3) paired with a physical Arduino Uno + ESP32-based hardware control panel for industrial and healthcare simulation
- Medical MRI/CT scan data rendered as interactive 3D volumes using volume rendering techniques, enabling real-time spatial inspection within the XR environment
- Physical control panel drives multiplayer XR session parameters, users manipulate volumetric medical imagery collaboratively across networked headsets via Photon Fusion 2
- Bidirectional real-time data flow between physical sensors and Unity simulation via serial communication and ESP32 wireless bridge
- Application domains: medical imaging education, surgical planning simulation, and automotive-grade industrial monitoring

2026 – Ongoing - ANKARA, TÜRKIYE

**MEDIBOT** AI-Powered Turkish Health Assistant (Unity + TypeScript)

- Multi-LLM mobile health assistant app integrating OpenAI GPT, Anthropic Claude, and Google Gemini APIs
- RESTful API integration with async/await data flows and JSON parsing across Unity (C#) and TypeScript backend layers
- Firebase Auth, Firestore real-time database, image analysis pipeline; 3-tier subscription system with dynamic model routing

2022 – 2023 - ANKARA, TÜRKIYE

**ECE VR BRAIN SURGERY SIMULATION** Inter-University Competition

- Immersive VR brain surgery training simulation in Unity; implemented surgical interaction mechanics, haptic-style feedback, and anatomical 3D model integration
- Focused on procedural accuracy and educational value for medical training contexts

## ● SKILLS

**Unity & C#:** Unity 3D/6, C#, OOP, ScriptableObjects, Scene Management, Prefab Management, Addressables, Unity Profiler, Sentry, WebGL builds, VR builds (Meta Quest 2/3)
**Networking & Backend:** Photon Fusion 2, Photon Voice 2, Firebase (Firestore, Auth, Realtime DB), REST API integration, JSON parsing, async/await, WebSocket basics
**Version Control:** GitLab, GitHub, Git branch workflows, CI/CD basics in daily professional use
**Platforms:** Meta Quest 2/3 (Android/XR), WebGL, iOS, Android, Windows Standalone, Microsoft HoloLens, VARJO, Apple Vision Pro
**Hardware & Embedded:** Arduino Mega-Uno-Nano, ESP32, ESP32-CAM, Raspberry Pi, CAN Bus, sensor integration, serial communication
**Shaders & VFX:** HLSL, Unity Shader Graph, visual effect systems (automotive HMI & simulation contexts)
**AI / LLM Integration:** OpenAI API, Anthropic Claude API, Google Gemini API, NMT systems, prompt engineering
**UI/UX & Design:** Figma, ProtoPie, Unity UI Toolkit, UGUI, HCI research methodology, user testing, eye tracking
**Languages:** C# (primary), Python, TypeScript, C++ (basic), SQL
**Tools:** Unity Profiler, Sentry, Postman, Figma, GitLab CI, Jira

## ● EDUCATION & TRAINING

08/09/2025 – Current - ANKARA, TÜRKIYE

**HEALTH INFORMATICS (ENGLISH-MEDIUM)** Hacettepe University

- GPA: 4.00 / 4.00 | MSc (2nd Year)
- Research: XR in medical education, LLM-based localization for Unity simulation, digital simulation effectiveness
- Research: NMT vs. LLMs for Medical Simulation Localization in Unity, under review at IJSG
- **Level in EQF:** 7

03/09/2018 – 2023 - ANKARA, TÜRKIYE

**SOFTWARE ENGINEERING** Atılım University

- GPA: 3.43 / 4.00 | Full Merit Scholarship (4 years)
- Focus: Human-Computer Interaction, UX Design, XR Development
- Erasmus Exchange: University of Ostrava, Czech Republic (2022, GPA: 3.49)

**Level in EQF:** 6

## ● PUBLICATIONS

- Evaluating Usability and User Experience in a Virtual Reality-Based Driving Simulation - International Informatics and Software Engineering Conference, 2026
- Understanding User Experience (UX) for Virtual Reality Based Surgical Training - EDULEARN Conference Proceedings - D. Topalli, Y.E. Cetin, B.K. Pamuk et al.
- A Temporomandibular Joint Course with Metaverse Experience - International Eastern Conference on Human-Computer Interaction (HCI 2023), 2023
- NMT vs. LLMs for Medical Simulation Localization in Unity (under review) - International Journal of Serious Games (IJSG), 2025

## ● LANGUAGE SKILLS

**Mother tongue: Turkish**

English: C1 Listening | C1 Reading | C1 Spoken Production | C1 Spoken Interaction | B2 Writing

## ● RECOMMENDATIONS

Burak Kızılkaya - Aston Martin Lead Designer | +44 7450 421 200
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