



Mark McKenzie

CEO, AI Developer And Senior Software Engineer

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Executive Summary Update (2026)

CEO of Jam-Live LLC and hands-on technical founder with 25+ years across AI, XR, Unity, real-time 3D, DICOM medical imaging, and production software. Senior software engineer and technical leader with a rare ability to connect research, architecture, code, graphics, infrastructure, and product delivery. Co-founder and CTO roles, volume-rendering patents, and principal developer of software that reached FDA approval. Strongest where projects require invention: turning complex ideas into working systems and making advanced technology understandable through compelling visual demonstrations.

Recent Activity Highlights

- Jam-Live LLC (2020-Present) · CEO, Founder, AI Developer, and Technical Architect.
- Built AI infrastructure: Python, PyTorch, CUDA, Docker, Kubernetes, GPU inference and model deployment.
- Created virtual try-on technology and custom dataset pipelines for training, evaluation, and production.
- Led generative AI work: image/video workflows, LLM/VLM evaluation, prompt systems, and synthetic media.
- Built Unity and XR systems for AR/VR, Quest 3, AI-driven characters, shaders, and WebRTC streaming.
- Advanced ad-quality and policy classification pipelines: VLM/LLM-based OCR, scam detection, screening.
- Produced technical demos, dashboards, and presentations that communicate complex systems clearly.
- Docomo Innovations (May 2020-Present) · Remote R&D with US/Japan XR and AI research teams.

Career Summary

- 25+ great years software development experience programming , collaboration, and management
- Instrumental in the creation of high tech software and companies
- Specializing in Artificial intelligence ,Mixed Reality , gaming ,entertainment , and medical fields.
- Co founded medical imaging company
- Co-creator/author on several patents
- Written countless lines of code
- Lead development team through the FDA approval process
- Full stack principal developer
- Research and evaluation, testing, and automation of build processes and content generation.
- Developed scientific and entertainment apps and programs for PC and mobile for years
- Bug tracking.
- Source control.
- FDA approval of software. I was the principal developer.

Skills/Experience:

- Artificial intelligence
- Python
- Unity 3D
- C#
- Virtual Reality
- Augmented Reality
- Mobile platforms
- Performance Optimization
- Fixing bugs
- Algorithms
- Automation
- AI
 - Python Torch, Tensor Flow, onnx, keras
 - Google Collab / docker / containers
 - Brain training/conversion
 - Generative
 - LLM
 - Training data creation , training, inference.
- Quality control
- DICOM, Medical imaging, data processing , analysis, measurements and interactions.
- Saving Lives
- FDA Approval
- Specifications and design creation and editing.
- Source control : multiple
- Presentations
- Software or other process evaluation , testing, measurement.
- Content generation pipeline.
- Docker / container environments, Ubuntu NVidia containers CUDA
- Visionary, philosopher, inventor, builder, artist, musician, dedicated and tireless worker

Experience:

Docomo Innovations- May 2020 - Present

- Remote research and development.
 - Virtual Reality.
 - Augmented Reality.
 - AI
 - XR
- Researched and evaluated companies and services.
- Developed Unity apps with C# to support testing and evaluating companies and services.
- I worked on multiple confidential projects in close communication with a team of expert researchers and developers from the US , Japan, and other countries.
- Mobile app development on Android and iOS.
- Created presentations from research.
- Presented in many collaborative meetings.

CARNEVALE,Remote

Carnevale - August - May 2020

I worked with a small team of designers and developers to build an incredible augmented reality experience. Walk inside the building before it is created.Real world GPS aligned. I also worked on another AR construction augmented reality app for one of the clients.

- Fred Meijer Medical Innovation Building
 - Clients
 - Carnevale
 - Rockford Construction
 - Michigan State University
 - Augmented Reality
 - iOS
 - Android
 - First AR groundbreaking event
 - Programming
 - Mesh modification
 - Merge geometry
 - Remap lightmap UVs after merge
 - Geometry decimation
 - Resources
 - Lighting
 - 28x2048 lightmaps
 - Multiple multistory buildings
 - Optimization.
 - Object instancing
 - Object combine for high performance
 - VR cubemaps
 - Material creation assigning
 - Data packaging
 - asynchronous download
 - Cache downloaded data to not waste bandwidth
 - Reuse of technology built for previous project

Carnevale - March - October 2019

The Plaza Roosevelt app allows you to take an Augmented Reality (AR) tour of the future neighborhood and to learn more about the neighborhood.

- Rockford Construction Habitat for humanity building visualization
 - AR project
 - iOS
 - Android
 - Unity C# App development
 - Programming
 - Resource development
 - Scene building
 - Materials

- Shaders
 - Lighting
- Data and app separation for large scene data
 - avoid store size limits
 - facilitate faster building
- Asynchronous data download
- Caching data
- Optimization
- Individual building data packaging
- Screenshots
- VR cube maps
- Persistent data

Carnevale - July - December 2018

The ability to use your phone to drop in furniture, then move it, remove it, and change the material served as the foundation of the app.

- Cumberland 3D AR furniture placement and sales app
 - iOS
 - Android
 - Full app development
 - Programming
 - Resource building
 - Build catalog
 - Items
 - Icons
 - Interfaces
 - Data conversion
 - Lighting
 - Lightmapping
 - AR shadows
 - Interactions
 - Furniture
 - Materials
 - Catalog
 - Forms
 - Email
 - Persistent data
 - Unity

Carnevale - May - July 2018

SkyLens uses current satellite data to display weather in AR.

I wrote most of the data loading code. It was complex to load the weather data but the loading code can be reused for multiple apps.

- SkyLens AR Weather App
 - iOS
 - Android
 - Asynchronous satellite data access c#
 - Fast search of city data names , distance , population data
 - Radar data
 - Other weather data integration

Carnevale - November 2017 - May 2018

GolfLogix has a very popular golf app. I wrote much of the data loading and optimization code.

Also wrote and collaborated on the putt simulator.

- Golf Logix
 - iOS
 - Android
 - Putt simulator
 - C# Asynchronous data framework
 - shapefiles, .GRD files, heightmaps lidar and other data
 - Algorithms

- Terrain to mesh conversion
- Performance analysis
- Performance optimization
- Bug fixing
- Maintenance
- Multithreading
- Encryption

Red Frizbee Studios Howell , Michigan November 2014 - 2017.

Senior programmer Co-Founder

- Unity C# App/Game development
- I wrote a lot of the c# code
- Networking
- Character physics.
- Animated physical characters
- Complex character interaction
- Stats tracking
- VR
- AI
- Audio
- 3D User interfaces
- 2D User interfaces
- Real Time volumetric lighting on one game
- Resource loading and persistent storage
- Steam integration Achievements / friends / Trading cards / collectibles
- In App Purchases
- Environment building
- Character building
- Lighting
- Optimization
- Shaders
- Design
- Profile management
- WebRTC
- PushNotifications
- Not all games were written in C#.
- Cloud server work such as user data and IAP in python and other languages
- Games produced on PC,Steam,Mobile,Amazon underground,Windows Store,Facebook
- Games produced Double yellow racing, Chessfire, Mega Rats and others all on multiple platforms

Jam-Live LLC Howell , Michigan November 2012 - 2014

Senior programmer Co-Founder

- App engine seamlessly scalable cloud computing
- Cloud storage.
- Programming
- Bug tracking/fixing
- A quantity of Python, Html,Javascript, and other related languages
- Database programming
- User metrics, preferences
- Cloud storage of recorded songs
- Networking
- Binary P2P real time audio
- User systems
- Users can play live and have listeners
- Users can join into jam sessions and play with 5 other musicians
- Users can meet new people through social aspects of the site
- UI programming html,css,javascript,json
- Integration with Facebook

- Marketing of all kinds
- Real time trading platform using RESTful apis
- Unity cross platform engine integrated in C#,javascript
- WebRTC
- DataChannel
- Research documentation

Intrinsic Medical Imaging LLC Bloomfield Hills , Michigan January 2011 - September 2012

Co-Founder CTO, Principal programmer

- US patent on volume rendering.
- FDA approved software and code process.
- Philosophy, Architecture and Design.
- Many languages were used for development.
- Html, Javascript, C++ were used for easily customizable interfaces for doctors with many different specialties and time constraints.
- Always changing UI requirements were able to be handled by multiple developers through HTML, javascript.
- Customization and interface design are critical for doctors who all want something different.
- C, C++ were used for much of the time critical code.
- The QT library was used for the front end interfaces.
- QT was fantastic for flexible configurable interfaces.
- We used perforce for source control.
- We used dev track for bug tracking.
- Optimized workflow.
- Optimized graphics engine.
- 3D user interface design and implementation.
- Bug tracking and fixing.
- UI design and programming.
- Display and persistence of analytical data.
- User tracking and metrics.
- User event recording and playback.
- Interface to dicom data, imaging, and pacs networking.
- The integration of dicom required much research into the formats of the data and dicom networking for the transfer of images and other test data and patient information.
- Created measurement tools for data quantification.
- Parallel algorithms for data analysis.
- Optimized loading of gigabytes of data in parallel on multiple processors.
- Documentation and planning.
- Systems for quick access to data such as palettes, effects, and presets.
- Customizable intuitive interfaces for doctors of any computer ability.
- Created alternate systems using Qt for multi platform use.
- Manage clinical studies.
- Manage FDA testing process.
- Manage employees of a wide range of skills and experience.
- Participated in meetings.
- Communication with doctors for research and collaboration.
- Correct and write requirements, System Requirements Spec, Software requirements Spec.
- Interviewed and trained employees.
- Researched solutions to unsolved medical software advancements.

Intrinsic Medical Imaging Inc Howell , Michigan August 2008 - January 2011

Co-Founder CTO, Principal programmer

- We displayed the software at the RSNA in fall of 2009.
- Philosophy.
- The purpose of the software was to visualize volumetric medical data, such as CT or MRI.
- The goal was to save lives.
- We created the highest quality real time view inside the body ever.
- We used state of the art equipment , rendering and unique algorithms.
- All volumetric medical data was usable for viewing and measurement.
- Wrote almost all code that was non shader related.

- The software made use of C#/c++ for interfaces and prototyping.
- Much time was spent optimizing code for C/C++.
- C/C++/html/javascript created a smooth and customizable workflow for doctors and scientists to view ,measure and analyze data.
- C/C++/html/javascript allowed for interface code to be separated from complex algorithms and data loading and manipulation.
- Bug tracking and fixing.
- Wrote the interface to dicom. Dicom stands for Digital Imaging and Communication of Medical data. The integration of dicom required significant research into the formats of the data and dicom networking for the transfer of images, patient information, and other test data.
- Wrote all measurement code including 2D and 3D interfaces.
- Wrote code for the display of analysed data.
- Systems for quick access to data such as palettes, effects, and presets.
- Spent time at trade shows to meet new business partners and explore other uses for our software.
- Communication with doctors for research and collaboration.
- 3D user interface design and implementation.
- Multithreaded data loading of volume data and textures.
- Optimized graphics engine.
- Communication with doctors for research and collaboration.
- UI design and programming.
- SQL databases for medical and other data.
- Intuitive flexible configurable interfaces for data access and display such as autocomplete boxes for db searches.
- The interface was created with a combination of languages c/c++,html,javascript.

The Amusement Machine Inc Howell , Michigan June 1999 - August 2008

Co-Founder CTO, Principal programmer

- Many languages were used on this project such as C#,C/C++ and shader languages such as HLSL.
- Windows Presentation Foundation(C++,HTML) was used for customized data,user input, and complex user interfaces.
- C/C++ was used to create interfaces for video motion capture with access to multiple streams of video.
- C/C++ was used to display tracking data and other data overlays in real time video playback.
- Algorithms were created to maximize accuracy and speed of analysis.
- C/C++ was chosen for user input and interface design for it's easy customization and fast workflow.
- C/C++ was used to create a unified environment for the managed code and the C/C++.
- Controls related to video capture,editing,playback,recording and editing.
- C/C++ was used to create interfaces for speech recording , storage and synthesis in real time.
- Data binding was used to create complex interactions between video data, editing and analysis.
- Complex controls for the creation of physics objects , constraints, and data analysis..
- Used p/invoke for calling time critical c++ algorithms.
- 3D audio playback.
- Wrote structural and data import code for experimental rendering .
- Inverse kinematics.
- Implemented code for IK chains of 100s of links with multiple end effectors.
- Networked real time distributed rigid body physics.
- Data import and persistence.
- Implemented automatic persistent storage of objects and their properties such as a spring and it's tension.
- The engine had a plugin framework to allow for swappable graphics engines such as opengl, directx, and Radiance.
- Wrote a physics engine that had features such as hierarchical boolean collision and dynamic object pooling.
- The plugin architecture also allowed for swappable physics engines such as havok, ipion, critical mass labs vortex engine, physx, and Novadex,bullet.
- With C/C++ wrote a plugin that integrated the vortex engine with 3d studio max.
- We displayed our software at siggraph in San Antonio.
- Literally 3D interfaces.
- Implemented 3D object position and sub properties of objects such as a spring.
- Distributed compiling using networking and multiple threads for parallel compilation on each computer.
- Speech recognition and synthesis.
- Inverse dynamics.
- World creation UI and environment.

- Real time texture switching and video textures using DirectShow.
- Optimized visibility and rendering pipeline.
- Visualization structures octree and bsp.
- External program capture.
- You can run Prey from inside the program to display it on the wall and fully interact with it.
- Learned many languages and skills.
- Proficient with HLSL and GLSL.
- Created a distributed build system for msvc.
- Tested many video formats for use in motion capture.
- Block based video compression algorithm.
- The engine we created also became the foundation for **Intrinsic Medical Imaging Inc and LLC**.

Other projects

- RTX enabled real time renderer and light baker with advanced multi material objects
- Unity plugin for RTX rendering and HD light baking
- C# artificial intelligent real time trading robot
- Artificial intelligence for medical and other data oriented projects
- Other artificial intelligence projects
- 3D object and scene capture
- Other AR projects
- 3DS max plugins
- Bitcoin mining farm

SKILLS and TRAITS

- I believe in quality control and building
- Parallel programming.
- Networking and distributed systems.
- Plugins and other architectures.
- Optimization and debugging.
- Source control(perforce) and bug tracking(devtrack,others).
- Systems integration.
- Excellent written and oral communication.
- I thrive in a group setting.
- I work well under pressure and I don't miss deadlines.
- Co-Creator US patent on volume rendering.
- Developed software has been approved by the FDA for visualization and measurement.
- Fast learner and problem solver.
- Excellent time and program optimization.
- Autonomous.
- Attention to detail.
- Results oriented in programming and management.
- Experience with Agile methodologies.
- Many years using MSVC and other dev environments such as Eclipse and Mono Develop and XCode.
- Management, employees ranging from experienced PHD programmers to junior programmers.
- Managed 10+ programmers/testers at a time.

LANGUAGES

Python
 C#
 C/C++
 hlsl,glsl
 javascript,html,css,jQuery
 sql,gql,python,php
 XAML
 json,java,xml
 Ruby
 Others...

Achievements:

- Patents for volume rendering
- Lead a team to FDA approval of software I wrote and developed

Most Used Tools

- Unity
- Visual Studio
- Notepad++
- Docker
- Torch

EDUCATION

Howell High School, Howell, Michigan. Graduated June 1999 with a GPA of 3.85.

AP courses on c/c++ and machine language

Many years of experience , hard work and successful projects.

FDA compliance

AFFILIATIONS

Jam-Live.com - a collaborative music experience.

References

- Mike Carnevale (616 648 1238)
 - Contractor and the owner of Carnevale
 - Specializes in Applications and design including AR,XR,Entertainment,Scientific,Sports
- Ted Billups(312 339 7657)
 - Former owner of Billups Design, and VP at ICI
 - Creative Business Strategist at Carnevale
- Lee McKenzie (517 518 4530)
 - My brother and fellow high level senior developer and visionary
- Dr. Fujio Watanabe (number on request)
 - Head of research and development Docomo Innovations
- Akihiro Tsutsui (number on request)
 - Head of business development Docomo Innovations

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