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Industrial Talk

Challenges in Graphics Development for Mobile Devices

David Chester

Lead Developer, Lockwood Publishing Ltd.

Abstract

My focus in this talk is on the development of mobile phones as gaming platforms, the increased power that is available with them, and the challenges involved in harnessing that potential. By delving into the performance gaps between different generations of hardware, and the unique challenges presented by the mobile ecosystem, this talk will explore some of the issues to be faced, and possible solutions for overcoming them.

Biographical Sketch

David graduated from University of Wales, Swansea in 2004 with a BSc in Computer Science and has worked in the games industry since 2007. He has published titles across multiple platforms including both handheld and regular consoles, PCs and mobile devices.

Industrial Talk

“Soft Skills” Considered Harmful: Growth, Change and Adaptation in the Graphics Industry

Ben Spencer

Senior Graphics Engineer, Unity Technologies

Abstract

The term “soft skill” is frequently used to describe any non-technical ability that is nevertheless considered valuable in an organisation. These skills range from mindfulness, to social and emotional intelligence, to the capacity to think and act holistically. Despite playing a quintessential role in our day-to-day lives, soft skills are often significantly undervalued compared to the technical proficiencies that are universally recognised as mission-critical. In this talk, I argue that hard and soft skills are merely two sides of the same coin, and that treating them as a dichotomy impairs an organisation’s resilience and its ability to react to change. To illustrate this point, I share some of my personal experiences working in the film and games industries, and describe how my most rewarding and empowering moments came through the synthesis of technical expertise and an empathetic, people-focused mindset. I also advocate for the value of systems thinking in the tech and entertainment sectors, whose rapid growth and immense reach have combined to make them powerful changemakers with a profound social responsibility. I conclude with a discussion of my recent time at Unity, and how I continue to draw upon these patterns to help the organisation grow while maintaining its founding principles of independence, empowerment, and a deep commitment to its users.

Biographical Sketch

Ben Spencer is a senior software engineer with an academic and industry background in physically based rendering. He began his career at Swansea University where he studied for a PhD in computer science, and later as a post-doctorate researcher in photorealistic rendering and visualisation. In 2013, he moved to California to join the team at Disney Animation where he helped develop the studio’s in-house renderer in time for its debut production, Big Hero 6. Later, he joined Double Negative (now DNEG) where he worked on upgrading the company’s rendering pipeline to deliver complex visual effects shots for films including Star Trek Beyond, Annihilation, Pacific Rim 2, and the Marvel Cinematic Universe. He now works at Unity Technologies where he continues to apply his expertise in rendering to the next generation of games and real-time applications.

Keynote

Visual Entropy as a Tool for Better Visualization

Nick Holliman

Newcastle University

Abstract

The information theoretic view of visualization and human visual cognition provides some insights into the information flow from data to perception. However, Shannon entropy is not designed for representing the type of noisy receiver that is the human brain, for example Shannon receivers do not make up hypotheses about missing information or infer new ideas they simply reproduce a message from a sender. On the other hand visualization as design can lack rigour and rely on design experience rather than theoretical underpinnings. Bertin's semiology of graphics takes this approach, developing a practically useful but informal approach to information representation. Over the last few years we have been exploring an approach to visualization design for glyphs that is founded in information theory and allows us to predict experimental outcomes for glyph designs. This is based on the observation that while humans are noisy information receivers they are still sensitive to the information content in a signal.

Biographical Sketch

Nick Holliman researches the science and engineering of visualization and visual analytics, addressing the fundamental challenges of visualization for Data Science and AI. His research includes the psychophysics of the human visual system, the creation of novel algorithms for the control of image content to match human abilities and demonstrating how these algorithms work in practice in scalable cloud-based software tools and award-winning 3D visualizations. He has worked in both industrial and academic environments and is experienced in delivering commercial impact from research outputs. He has led the design of high-performance visualization theatres at four different institutions which have been specified to support both individual and team-based decision making. He currently leads the Scalable research group at Newcastle University, is visualization lead for the Newcastle University Centre of Research Excellence in Data and is a Fellow of the Alan Turing Institute where he co-convenes the Visualization Interest Group #VizTIG, he is a member of IEEE CS, ACM, IS&T and a fellow of the RSS.