

Experienced open source developer and video compression expert

## WORK

- **Software Engineer**, Gaikai, Aliso Viejo, CA Summer 2010
  - Worked on low-latency, high-performance video streaming systems
- **Software Engineer**, Facebook, Palo Alto, CA Summer 2009
  - Worked with Facebook Video backend, lowered encode failure rate by 6x
- **Software Engineer**, Avail Media, Kalispell, MT Summer 2008
  - Television broadcast (IPTV systems), worked with x264 and libavcodec
- **Research Intern**, Naval Research Laboratory, Washington D.C. Summer 2006

## CONSULTING

- 3 years experience in video-related contracting
  - Wrote VAQ, improved realtime buffer management, and lookahead ratecontrol in x264 for Avail Media, improving broadcast video quality and reliability dramatically
  - Designed encoding toolchains for Criterion Collection and Facebook, reducing bandwidth costs dramatically
  - Improved 2-pass buffer handling in x264 for Vudu for more reliable quality in Video on Demand service
  - Improved CoreAVC H.264 decoder performance by 15% for CoreCodec using C and SSE optimizations
  - Developed ultra-low-latency video streaming solutions for Gaikai to create backend for “cloud gaming” system

## OPEN SOURCE

- Developer of x264 for 3.5 years, current lead developer
  - Software serves as the core backend for Youtube, Hulu, Facebook Video, Vimeo, and hundreds of others
  - Author of half of all commits in the past year; almost 1/3 of total commits
  - Developed three new algorithms
    - Variance-based Adaptive Quantization (VAQ)
    - Psychovisually-optimized Rate-Distortion Optimization (Psy-RDO)
    - Macroblock-tree ratecontrol (MB-tree)
- Mentored for Google Summer of Code 2008, 2009, and 2010
  - 2008 student, Holger Lubitz, published a Masters' thesis based on progress made under supervision
  - Also mentored for Google Code-In 2010-11
- Developer of FFmpeg for 2.5 years
  - Primary work in H.264, VC-1, and VP8 decoding performance optimizations
  - One of three primary authors of the ffmpeg VP8 decoder

## SKILLS

- Programming
  - Strong knowledge of the C programming language, 4 years experience
  - Experience with other high-level languages such as Python, Java, C++, and Haskell
  - Proficiency with x86/x86\_64 and SIMD assembly, 3 years experience
  - Skill with GNU/Linux development toolchains
- Multimedia
  - Highly detailed knowledge of the H.264 standard and related technology
  - Familiarity with other MPEG-like video formats such as MPEG-2, MPEG-4, H.263, VC-1, Theora, and VP8

## EDUCATION

- Harvey Mudd College (Claremont, CA) Expected May 2011
  - *Bachelor's of Science in Computer Science*
- Thomas Jefferson High School for Science and Technology (Alexandria, VA) 2007