Ronald Newman of ZpNetics resurrects Super-G superscalar GPU processors

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After 40+ years of R&D, Ronald Newman resurrected his initial GPU R&D and is now in the process of manufacturing his first set of Super-G GPU Processors deploying his quick-turn minimal “lights-out” fab manufacturing processes.

Mr. Newman began Processor R&D coupled with OS, Compiler and EDA R&D in the early 80’s. Mr. Newman’s designs were initially realized with discrete & bit-slice components, then onto FPGA and Shared wafer macro blocks put down onto a PCB.

While at Harvard and Dana-Farber Cancer Institute working with Dr. Alan Maxam (Maxam-Gilbert DNA sequencing) and Dr. Temple F. Smith (Smith-Waterman algorithm) developing advanced parsing and search algorithmics for recombinant DNA/RNA sequencing, still used to date, Mr. Newman was peripherally working on incorporating NEC’s µPD7220 graphics chips onto several PCBs. The µPD7220 established an easy to use, low-level set of instructions application developers could easily embed in their programs and thereby speed up drawing time.

A little history on the µPD7220; the µPD7220 quickly became popular and was the basis for several “dumb” terminals and a few graphics terminals (a “dumb” terminal is only able to display images and/or text). At the time the µPD7220 could support 1024 by 1024- pixel resolution with four-planes of color. Some systems employed multiple µPD7220s to get more color depth. In June 1983, Intel brought out the 82720, a clone (“barrowed”) of the µPD7220. The µPD7220 was produced until 1987 when it was replaced by a newer faster version, the µPD72120. Seeing its success, and the emerging market for computer graphics, Hitachi and TI also introduced graphics processors a few years later. At this juncture, Mr. Newman slowed his pursuits on GPU R&D and after working for several graphic GPU vendors (all defunct) implementing algorithms, discovered those GPUs as with today’s, lack a plethora of ergonomics and functionality once envisioned by the early graphics giants.

While at Harvard, Mr. Newman was sparked by NEC's µPD7220 and developed two PCBs with several µPD7220 chips on each board, one PCB for the PC-XT and the other for a UNIX 68020 based system coupled with vector processors. The task at the time was to render the DNA in animated 3D, which was the first animated 3D real-time visualization, and was the catalyst in garnering several large grants. Also, with the compendium book on graphics by Foley and others, this further sparked Mr. Newman to continue superscalar GPU R&D, but was later stalled again to redirect focus to his Super-Z & Super-V processors. Decades of work and with the advent of his current 'lights-out' fabs, Mr. Newman resurrected and coalesced his GPU and 3D-memory designs. "...I wasn't sure if I wanted to resurrect my GPU designs, but with recent personal events and iterative pandemics, I decided to make the days count, instead of counting days. It is time to realize and extend my R&D from the last four plus decades." said Mr. Newman.

Again, employing the concept of macro-blocks, Mr. Newman implemented the 1st Super-G GPU this week and is working past the ubiquitous GPU memory problem. This in turn, brought forth another project of Mr. Newman's, 3D-memory. He is now in the process of fabricating a 3rd iteration of his Super-G chips with focus on his 3D-memory.

"I realized early on it was brutal to perform R&D with COTS/commercial- products and was/is the recipe for disaster. Now, after 40+ years of developing, the coupling of my Super-Z, Super-V and Super-G processors with 3D-memory will further enhance and extend my Energy, Recombinant DNA and Synthetic-intelligence R&D and soon be past these barriers," said Mr. Newman.

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