

Background

BACKGROUND

The Intellectual Properties (IP) referenced at this site are exclusive developments of Rice Electronics (of Saint Louis, MO).

The Company's expertise spans several areas including;

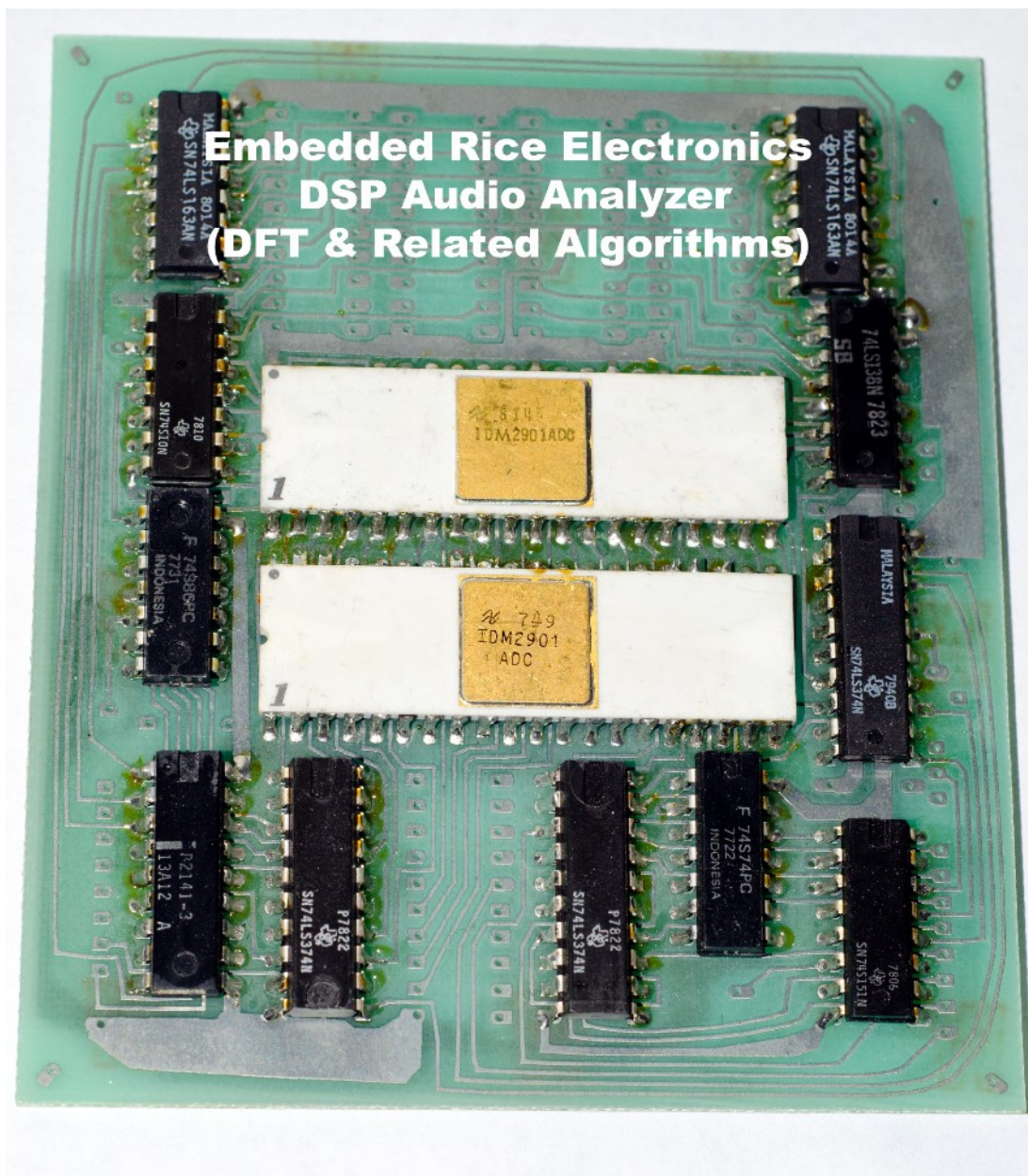
- **Digital Signal Processing (DSP)**
- **High Performance Embedded Computing**
- **System Modelling**
- **Digital Electronics**
- **Systems Engineering**
- **Communications**
- **Data Compression**

Currently, the Company's sole focus is Sixth Generation (6G) wireless networks. It is developing unique IP for 6G networks, with objectives of;

- **Parallel DSP @ 6G bandwidths, w/ 1000s of gates (not millions)**
- **Network response times measured in microseconds (not milliseconds)**
- **Low-latency User-to-User communications in high density environment**
- **Low-PAPR waveforms designed for multi-domain User access**
- **Advanced processing architectures for 6G comms and sensing**

Rice Electronics

Rice has a long history in the design and development of technology for real-time digital signal processing. This includes development of embedded audio-frequency analyzers, before the advent of DSP chips. Through use of bit-slice processors, these analyzers used the equivalent of only 1000 to 2000 gates and 1K bits of program memory. This achievement preceeded introduction of even the earliest commercial single-chip DSP processors. (Notably, the embedded Rice analyzers represented only a small fraction of the circuit complexity of such commercial processors). An example of these embedded Rice processors is illustrated in the image below.



Rice Electronics

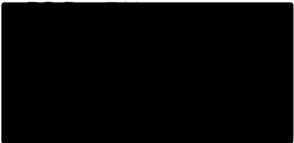
Rice Electronics was also the first company to ever configure a low-density FPGA device to perform real-time DFT/FFT processing. This accomplishment is reflected by the Figure below.

RICE

Partner Profile

May 25, 1997

Rice Electronics



Overview

Rice Electronics provides cores for FPGA-based designs. The cores range from multipliers to Discrete Fourier Transforms (DFTs), and are targeted at the Xilinx XC4000E logic family.

Rice Electronics employs a variety of proprietary techniques to reduce DSP circuit complexity. These range from specialized architectures, to highly efficient algorithms.

This results in cores which rival the performance of standard DSP components.

The XACTstep 6.0 development system provides the environment for application of the cores. The current focus is on DFT/FFT functions, with additional cores being planned.

Areas of Technical Expertise

Table 1 shows areas of Rice Electronics' technical expertise. Xilinx and Rice are in the process of evaluating these to determine which are suitable as AllianceCORE products. If you have a need for a specific product then contact Rice for information or availability.

Table 1. Rice Electronics Expertise

Product	Functional Description	Gates
DSP Functions		
FFTs and DFTs	DSP Modules for Xilinx XC4000 Family Devices	

The Company draws upon expertise founded in the most complex of programs, to start-up concerns. This spans program management, research, development and production across commercial, academic and military venues.

Rice Electronics

It now focuses specifically on developing 6G-related technology. The IP introduced at this site represents definitive advances in network concepts, waveform techniques and methods, and DSP. The IP is a technology base addressing fundamental challenges in the evolution of 6G systems and infrastructure.

Contact:

Rice Electronics

ricetronics@gmail.com

Filename: Rice Background 6-2023

Copyright © 2023 Rice Electronics