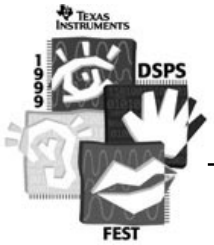

TI DSP University Research Program

Agenda

- Description
- Criteria
- Keys
- Statistics
- Summary
- Call-to-Action

TI DSP University Research Program

Description

- As part of Texas Instruments ongoing investment in Digital Signal Processing Solutions, we initiated a $25 million investment in research at universities worldwide focused on applications for high performance digital signal processors (DSPs).

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Criteria

- Support projects that:
  - Develop new SW apps using TI DSPs
  - Deliver high performance SW implementations of existing algorithms
  - Propose new DSP algorithms
- Research must be a DSP-based application on TMS320 architecture

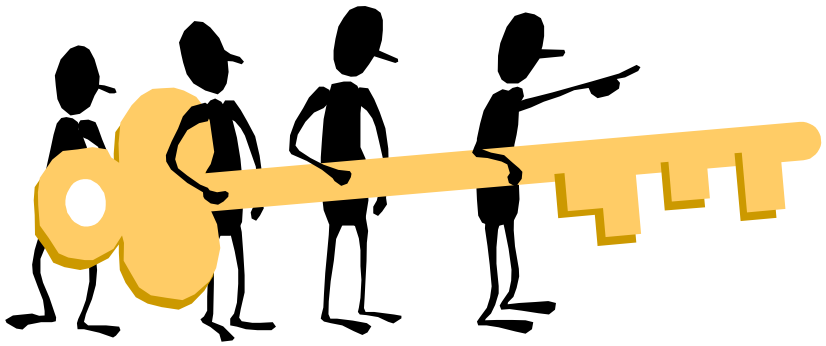
- PI must be a Univ faculty member
- Univ must have an accredited Engr or CS program (e.g. Accreditation Board for Engineering Technology (ABET) in the US, equiv int'l board)
- Univ must have an established DSP program

- Phase I Began: Oct 13, 1997
  Phase III: Begins 1Q00
  Submit abstracts NOW

- Review Process: Committee of TI tech and business development staff

DSP Univ Research Program

Keys to *successful* participation in the DSP University Research Program



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Innovative Applications

Stretch the Envelope

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Statistics

Funded Projects

Control
- SR Motors
- Brushless DC
- Induction motor
- HDD

Communications
- Turbo codes
- Broadband
- Cryptography
- Smart Antenna

Funded Projects

Audio
- Digital microphone array

Medical Imaging

Miscellaneous
- Java internet terminal
- Compiler efficiency

Competitive Program

- 285+ Abstracts Received
- 21 Projects Funded (7%)
- Grant Range ($18 - 250K); $100K/yr
- Term < 3 yrs; 1.5yrs

Video/Imaging
- 3D image reconstruction
- Digital watermark
- Video encoding/ compositing
- Low-bitrate wireless video
- Multimedia Algorithms

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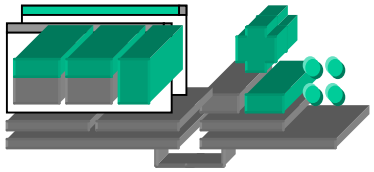
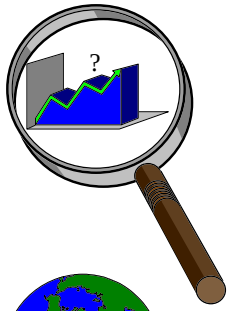
Summary

- IS

New DSP SW Applications



Supporting eXpressDSP™



Next wave

Worldwide

- IS NOT

University Donation Program or DSP Educational Assistance

New architecture development

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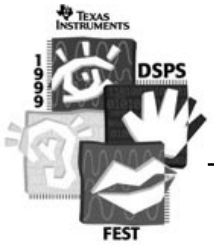
Call to Action

Submit your Abstract Today!!!

www.ti.com/sc/univfund



Additional Slides

TI DSP University Research Program Process

	Step	When	Comments
1	Submit abstract via **www.ti.com/sc/univfund**	Anytime	Email confirmation within 24 hrs
2	TI accepts/rejects abstract	Within 30 days of receipt of of abstract	Email notification
3	Submit full proposal	Within 30 days of abstract acceptance notification	Email confirmation within 24 hrs
4	TI accepts or rejects proposal	Within 30-60 days of prop receipt	Email notification, begin negotiation
5	Start project	After contract execution	

Project Descriptions

Phase I

- Matrix Factorizations in Fixed Point on the ‘C6000 VLIW Architecture
- Implementation of a Hiperlan Compatible Channel Matched Filter Equalizer Using the TI ‘C6000 DSP Platform
- Immersive Audio for the Desktop
- ‘C62x Compiler Evaluation and Development of an Optimizing FRIDGE Back End for ‘C62x C-code
- Analysis, Design and DSP Implementation of a faster than 56Kbps modem for the telephone Channel
- A TMS320C6201-based Dynamically Reconfigurable High-Performance Java Internet Terminal
- Digital Microphone Array System for Sound Capture and Video Teleconferencing
- Real-Time Video & Image Processing

Project Descriptions

Phase I

- A Low-Cost Solution For Washing Machine Motor Drive Using High-Performance Fixed Point TI DSP [TMS320C240]
- Low-Cost Solutions for Induction Motor Drives Using the TMS320C240 and TMS320F20 DSP Controllers
- Advanced DSP Based Controllers for Brushless DC and Switched Reluctance Motor Drives in Industrial and Consumer Product Applications
- 3D image reconstruction from a series of 2D views
- Cryptographic Library for TI Processors
- Novel Medical Ultrasound Applications Using A TMS320-based System

Project Descriptions

Phase II

- Application of Programmable DSP's to Turbo Decoders
- Beamforming Module for Smart Antenna System Operating in CDMA Mobile Communications
- Fixed Point DSP Implementation of a Bandwidth Efficient Wireless Modem with Smart Antenna
- Layer 3 Switching and Packet Filtering System (LSPF) based on TI's DSP Processor
- Back EMF Detection Techniques Applied to Hard Disk Drive
- Efficient Standard-Compliant Video Encoding and Compositing Using TI DSPs
- Search Engines for Content-based Image and Video Retrieval Using TMS320C6x DSP Platforms
- Standards-Compliant High-Quality Low-Bitrate Wireless Video Communications Using the TMS320C62x Processor

Innovative Applications

COMPUTER, COMMUNICATIONS AND OFFICE EQUIPMENT:

- Call processing systems
- CD-ROM players
- Copiers, Multi-peripheral copiers
- Digital imaging systems
- Digital imaging systems
- Hard disk drives
- High-speed modems (>= 56k bps)
- ISDN modems
- Laser printers
- Multi-channel modems
- Multimedia workstations
- Networking computer systems
- PC modems
- RAS
- Remote access concentrators
- Satellite modems
- Scanners
- Speech recognition and synthesis
- Speech recognition systems
- Tape drives
- Voice mail systems
- Voice/speech processing systems
- x2™ 56K bps/DSL hybrid modems

COMMUNICATION FACILITIES:

- Central office switching systems
- DSLsystems
- PBX & telecom switching systems
- Videoconferencing systems
- Wireless base stations

PERSONAL COMMUNICATIONS EQUIPMENT:

- Adv multifunction cellular PDAs
- Digital (tapeless) answering machines
- Digital cellular supporting WW stds (i.e. GSM, CDMA, TDMA)
- Digital cordless telephones
- Multi-feature phones
- Pagers
- PCS
- PDAs
- Video phones

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Innovative Applications

ENTERTAINMENT SYSTEMS:

•Computer games
•Digital audio/video systems (e.g video CD and CD players)
•Digital cameras and camcorders
•Digital satellite systems
•Digital set-top boxes
•Digital television
•Digital versatile disk (DVD) systems
•Musical instruments such as electronic guitars and keyboards
•Personalized video in airline seating
•Video and audio CD players

HOME APPLIANCES/SYSTEMS:

•Heating, ventilation and air-conditioning (HVAC)
•Home appliances such as washers, dryers and dishwashers
•Home management and security systems such as hand, fingerprint and face recognition

MEDICAL DIAGNOSTIC EQUIPMENT:

•CAT scan
•Hearing aids
•MRI
•Sonogram

INDUSTRIAL/RETAIL AUTOMATION EQUIPMENT:

•Bar-code scanners
•Compressors and heat pumps
•Electronic metering
•Factory automation systems
•Robotics control
•Servo and digital motor control brushless and SR motors
•Soft drink dispensing systems

AUTOMOTIVE SYSTEMS:

•Anti-lock and anti-skid braking systems
•Cruise control with radar-based collision avoidanc
•Electronic power steering systems
•Engine control
•Global positioning system
•Suspension systems