PREPARING FUTURE MINORITY FACULTY RESEARCHERS

By Clay Gloster, Jr.
Associate Dean, College of Science and Technology
Interim Chair, Department of Computer Systems Technology
March 26, 2018

AGGIES DO

Dr. Shea Bigsby

Dr. Clay Gloster

Dr. Mark Melton

Ayanna Boyd-Williams

Dr. Christopher Doss


Dr. Evelyn Sowells-Boone

- Orientation February 26, 2018 at 11:30 in 2016 Smith Hall

- Monthly Workshop March 26, 2018 at 11:30 in 2016 Smith Hall

- Monthly Workshop April 26, 2018 at 11:30 in 2016 Smith Hall

- Symposium May 18, 2018 at 8:30 a.m. in 2016 Smith Hall

- Attend Workshops/Webinars
- Attend the Annual Symposia
- Select/Engage with Faculty Mentors – Status Update
- Develop a Professional Development Plan – Due April 26
- Monthly Report – Due by the end of March
- Teach A Course – Next year
- Create an Electronic Portfolio – Begin now

Incentives will be given to students who participate in all aspects of the project!!!
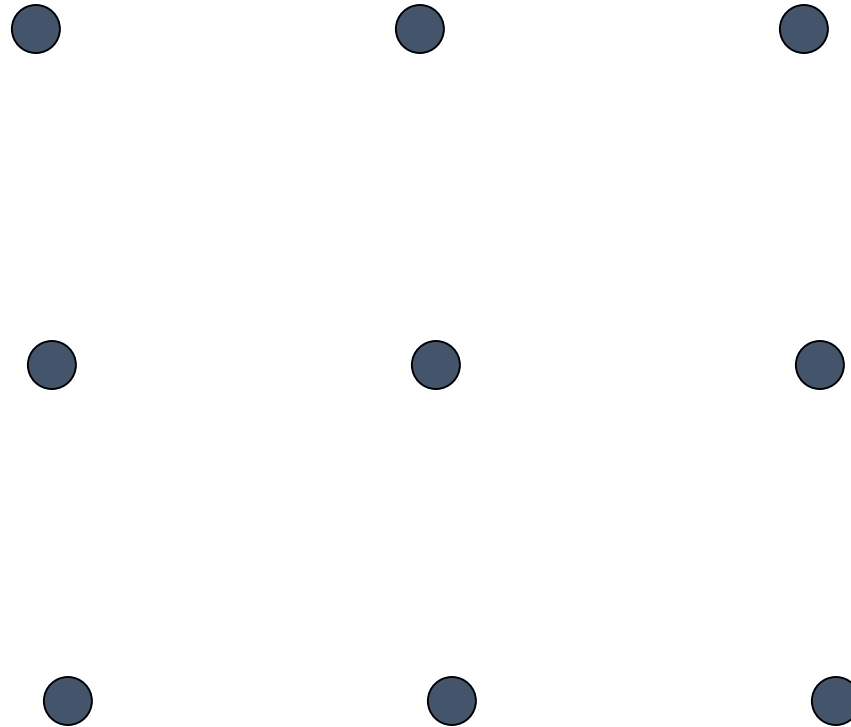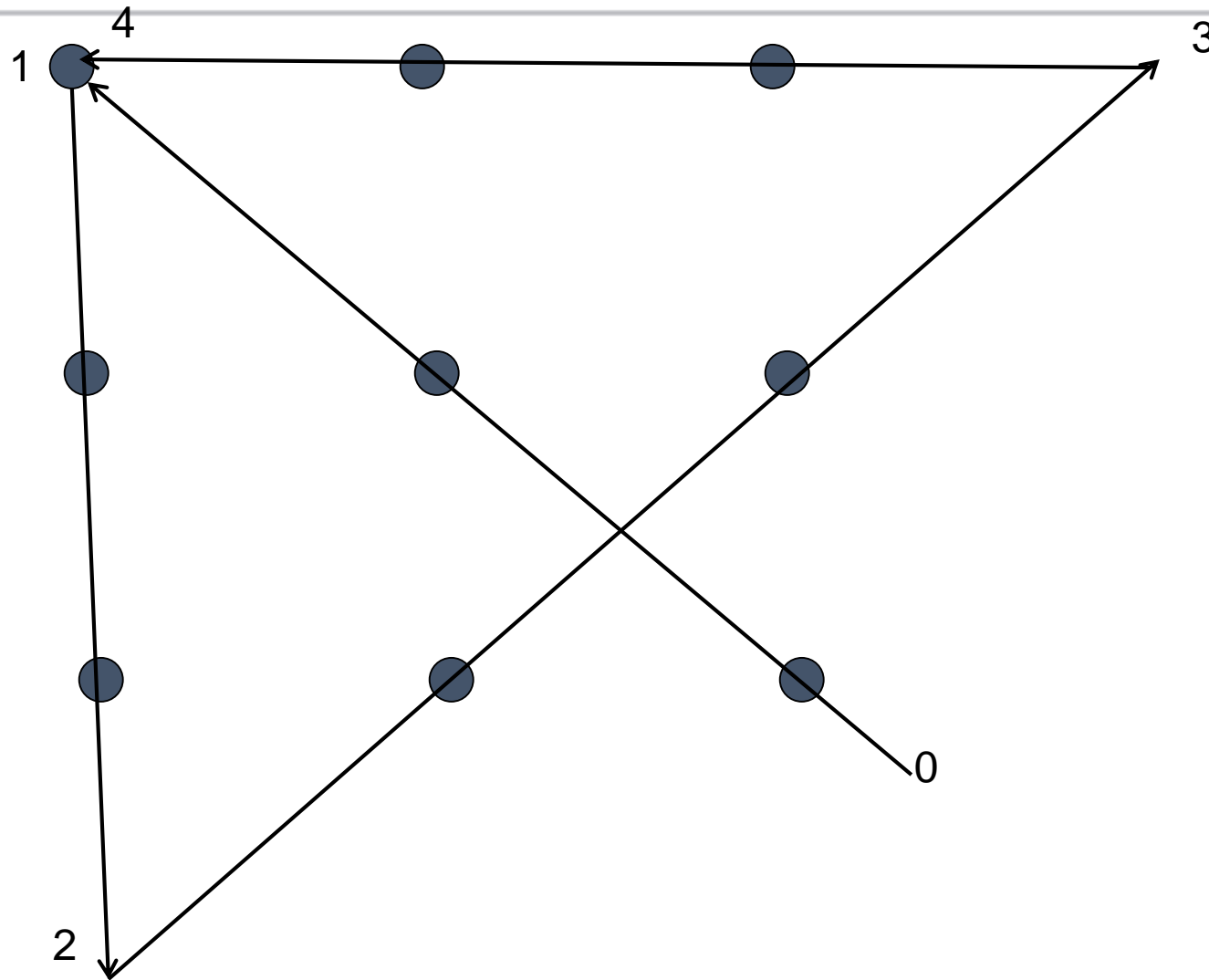
A&T Preeminence 2020

- establishes the structure to convert our aspirations into realities: being the institution of choice for high achieving students; attaining and maintaining a level of high research activity; ranking among the nation's leading research institutions; employing faculty and staff who are consistently recognized for distinguished achievement; having an endowment that meets our needs; highly engaged in local and regional activities; and becoming a globally diverse campus.
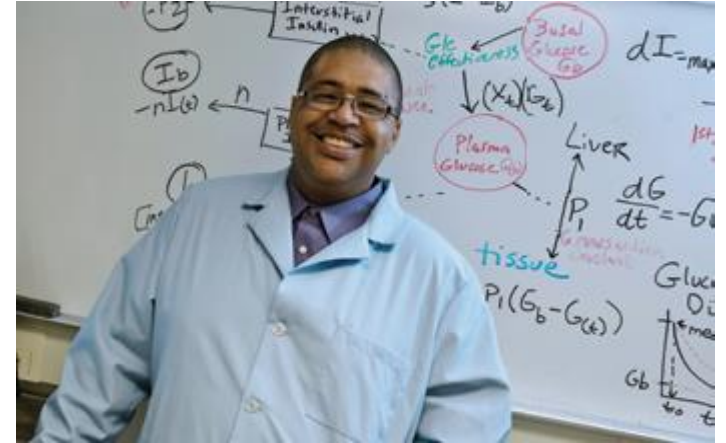
Departmental Benefits from Research

- Funding to Depts. Via Overhead - More administrative personnel, better equipment

- Student Undergraduate and Graduate research funding/tuition

- More teaching assistants/research assistants

- Department establishes a reputation for being a leader in a specific field/area

Faculty Benefits from Research

- Opportunity to be involved current research

- Enhances the faculty teaching – engagement in current activities

- Enhances credibility of the researcher

- Contributions to the discipline which is important for promotion/tenure

- Publications, patents

- Summer salary, overhead return

Ph.D. Students and Post Docs Should Publish Each Year

- Some universities expect new faculty to publish three journal papers per year.

- To get a paper published in a journal, research should have matured from previous work published in a conference proceedings.

- Question: How do you pick which journals/conferences to publish in?

- What's the difference between being accepted as a poster or paper?

- How do you measure the quality of a conference or journal paper publication?

2018 IEEE International Conference on Computer Design (ICCD)
Call For Papers

Oct 7-10, 2018
Orlando, Florida, USA

IMPORTANT DATES:
    May 18   Abstract submission
    May 25   Full paper submission
    Aug 6   Notification of Acceptance
    Aug 31   Final paper

Webpage: http://www.iccd-conf.com

Journal Papers Versus Conference Papers

- Peer review
  - Journals are peer-reviewed
  - Some conferences are peer-reviewed.

- Time to publication
  - Journals typically take at least one year to publish.
  - Conference papers take a few months to publish.

- Take a closer look at the [sample journal paper](#).

Developing a Collaborative Research Team

Planning Ahead

- Are there others in my department that I work well with?

- Are there others in my school/college that I work well with?

- Are there others in university that I work well with?

- Are there others outside of my university that I work well with?

- Who do I know that already has several publications in this area?

- Who do I know that already has several funded research projects?

What can I bring to the table?

Brainstorming Activity

1) Form groups of 2-3 people.
2) Select one person to be the recorder.
3) Take out a piece of paper and a pen.
4) Remember that **quantity** is more important than **quality**.
5) Answer the following question.

List ideas/suggestions that would help new faculty to get their research program going.

Tips for New Researchers

- Start Early, Start Early, Start Early
- Use the summer and winter breaks wisely
- Develop a strawman proposal and presentation
- Attend a conference in Washington and visit a few funding agencies
- Begin to form your research team
- Connect with a senior researcher immediately
- Establish your own research program
- Start a research laboratory
- Teach graduate courses
- Ask questions of others on how to get things accomplished

Tips for New Researchers

- Get a mentor
- Consider new research areas that have high probability of funding.
- Ask for help and use the advice
- Prioritize your tasks, research, teaching, and service
- Be sure to submit lots of proposals
- Include preliminary results in your proposals
- Get students working on your unsupported projects
- Create generic budget and facilities templates for reuse
- PhD and MS theses are great sources of proposal ideas

Locating Potential Funding

- Government Agencies
  - » National Science Foundation
  - » Department of Education

- Foundations
  - » Verizon Foundation
  - » Sloan Foundation
  - » Melissa and Bill Gates Foundation

- Corporations
  - » Intel
  - » John Deere

Next Steps: Reading the Request for Proposals (RFP)

- Find out about the total budget.

- Find out when it is due. If it's due next month, then we do not have enough time!!!!!!!

- Find out if there is a limited number of proposals that can be submitted from each institution.

- Find out who the name, email address, and telephone number of the program director.

- Plan a trip to meet with the program director or call them.

Writing the Proposal

- Use the proposal outline found in the RFP. Don't add or subtract major sections. Answer questions found in each section as posed in the RFP.

- Follow all of the instructions in the RFP to the letter.

- Plan out your proposal writing effort so you can submit before the deadline!!!

- Set target dates for completing sections and stick to your schedule.

- Start with the project summary and the budget.

- Redo the project summary when you've completed the proposal.

- Get a team to assist in editing the proposal.

- Too many authors writing different sections of the proposal is not preferred.

Developing the Budget

- Senior Personnel

- Students: Undergraduate/Graduate

- Materials Supplies

- Travel

- Participant Costs

- Equipment (items > $5k)

- Overhead (not on tuition, participant costs, equipment)

- A sample budget should be made ahead of time.

Proposal Submission Tips

- Complete your budget first. Send it for review immediately.

- Complete the project summary.

- Complete your project description.
  - » Leverage existing documents that may be pulled in.
  - » Modify a previously rejected proposal and incorporate reviewer comments.

- Make a complete draft of the proposal including all sections that meets the page limitations.

- Consider an external evaluator to assess the effectiveness of the project.

- Submit your proposal before the due date!!!!

Other Tips Related to Proposals

- Develop templates that can be used in all proposals
  - » Facilities and equipment in your college/school usually do not change frequently.
  - » Keep a fresh copy of your bio or CV.
  - » List current and pending grants
  - » Sample budget [pdf] [xlsx]

- Use your resources!!!

- Take care of cost sharing.

- Secure a location for the instruction, project personnel and/or equipment.

- Make sure you keep a checklist and mark off completed tasks as you go.
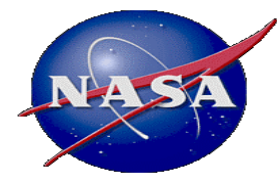
Hierarchical Algorithms and their Embedded Computational Realization in Reconfigurable Hardware

PI: Clay Gloster/NCAT State University
Proposal No: AIST-XXXX

ESTO
Science Technology Office
Earth

Description and Objectives

This project addresses problems associated with developing data products for deployment in onboard RC systems. It involves the development of a compiler that reads algorithm descriptions written in C. The compiler will produce hardware and software components required for an RC implementation of typical NASA data products. The main objectives of this project are: efficient algorithm development and fast and reconfigurable hardware implementations (10X-100X speedup).
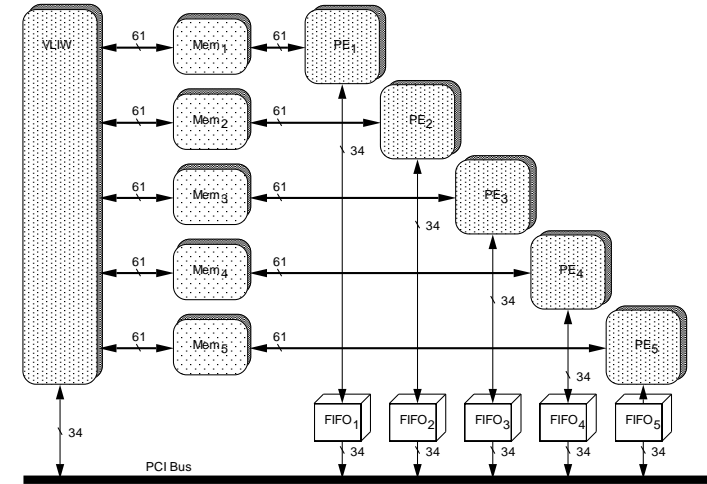
Approach

Develop a compiler to translate nested loops into a sequence of floating point vector instructions. These instructions correspond to modules in a library that will be developed as a part of this research project. Hardware modules will perform complex instructions i.e. matmult, vec-vecmult, FFT, etc.

Co-I's/Partners

Hamid Krim, NC State University
Tom Conte, NC State University

Schedule and Deliverables

- Prototype RC Testbed shown above (10/18)

-Prototype Compiler (10/18)

-Cloud Masking Data Product Demonstration (10/19)

-Final Compiler (10/19)

Application/Mission

Cloud Cover Assessment Data Product
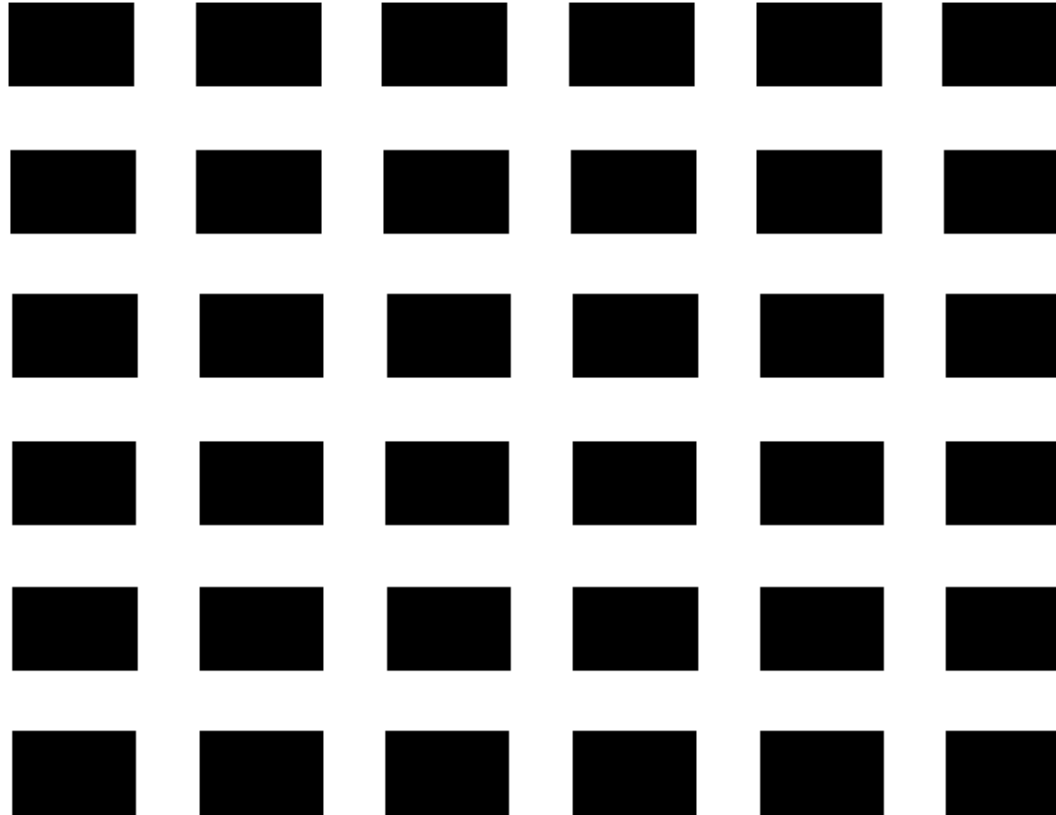 Development for EOS/AM-1 Satellite

ACTIVITY: STARE AT THE HERMANN GRID FOR A FEW SECONDS.
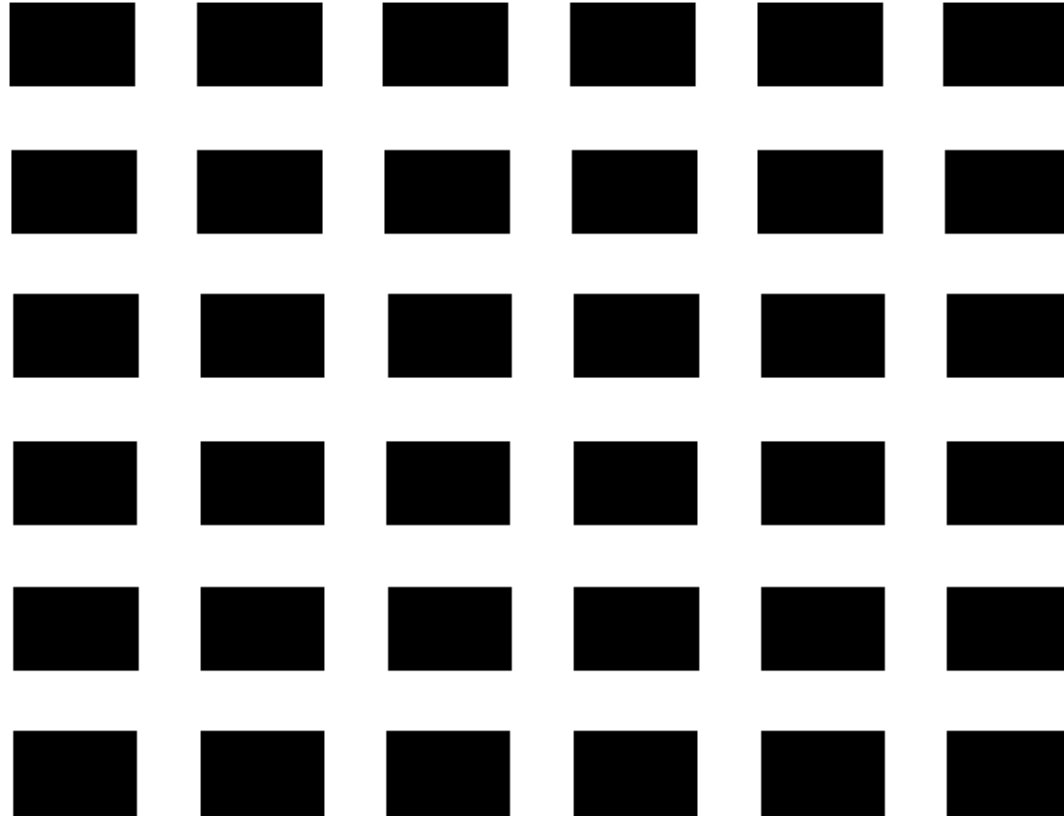
Tell me what you see.

WHEN EDITING, DON'T LET YOUR EYES FOOL YOU!!!!

When editing, many times we see words we did not write.

North Carolina Agricultural and Technical State University

Any Questions?

All questions are appropriate!!!