English Practice
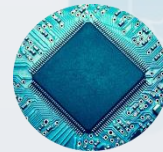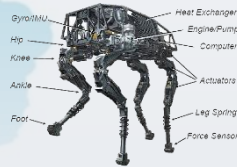
conference

Presentation

BIG DATA

How to speak English professionaly?

Writing

Networking

About Technical Presentation

Outline

- **Categorization of Technical Presentation**

- **Diverse Technical Presentations**

- **Academic Talk in a Nutshell**

- **Brief on Working Report**

- **Brief on Thesis Defense**

Outline

- □ **Categorization of Technical Presentation**

- □ **Diverse Technical Presentations**

- □ **Academic Talk in a Nutshell**

- □ **Brief on Working Report**

- □ **Brief on Thesis Defense**

Categorization of Technical Presentation

```
                    ┌─────────────────────────┐
                    │  Technical Presentation │
                    └─────────────────────────┘
```

Technical speech	Working report	Thesis defense

Keynote speech	Plenary speech	Tutorial	Paper presentation	Academic talk	Invited talk

Conference related

Short courses, group discussions, academic visit, etc.

Note: Sometimes academic talk and paper presentation are quite similar.

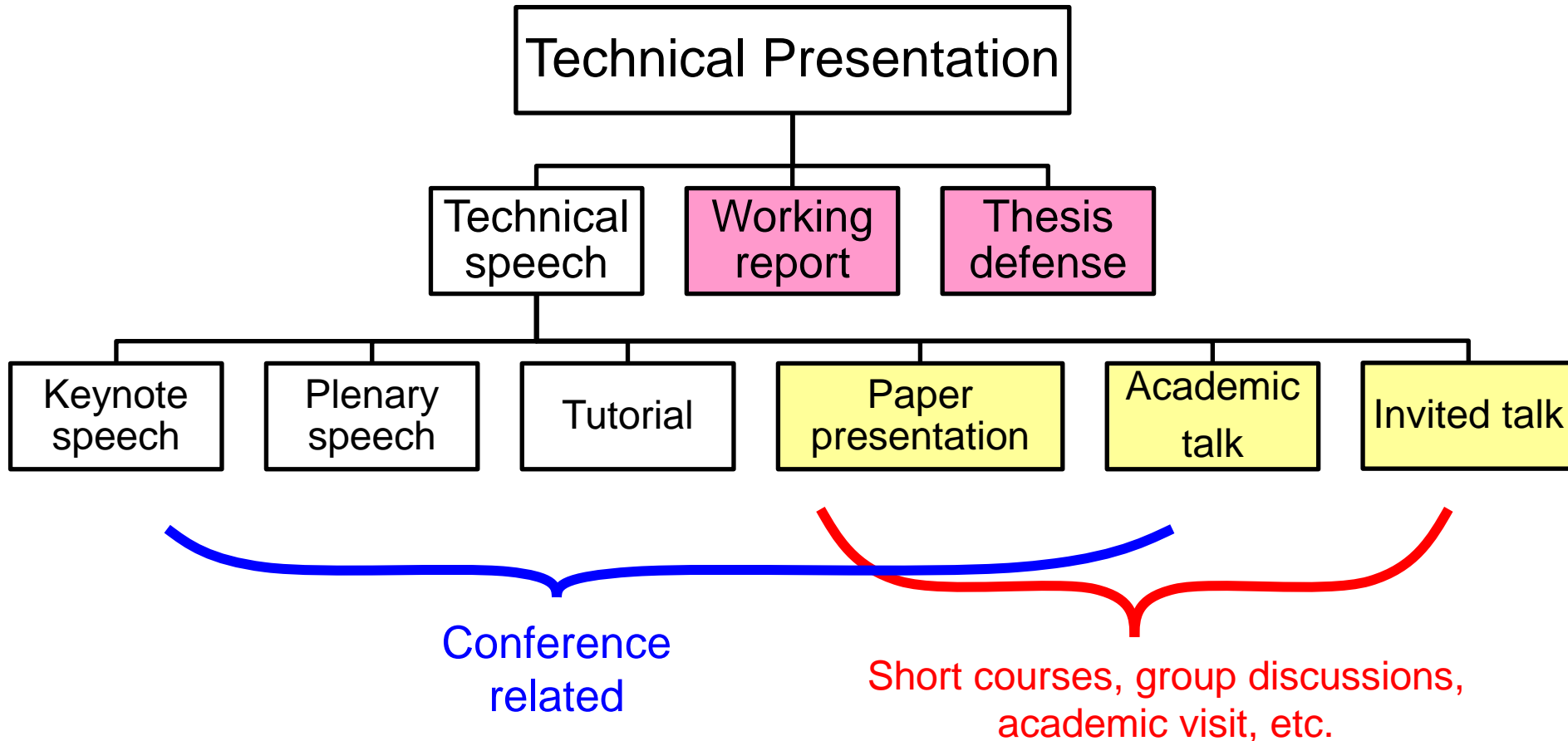# Outline

- **Categorization of Technical Presentation**

- **Diverse Technical Presentations**

- **Academic Talk in a Nutshell**

- **Brief on Working Report**

- **Brief on Thesis Defense**

Technical Presentation

□ **Technical speech**
- Purpose: Share your professional opinions on certain topics
- Audience: People who work and interested in the topic
- Content: Survey, overview, technical details, forecast tendancy, etc.

□ **Working report**
- Purpose: Report the progress of work
- Audience: Your superiors and/or peers
- Content: Stick tightly to the project requirement

□ **Thesis defense**
- Purpose: Show your research work and outcomes
- Audience: Degree evaluation committee
- Content: Systematic yet compact summarization of the core idea, designs, and results of your research

Technical speech

Name in English	Typciall Occasion	Speaker	Topics' nature & coverage	Audience	Length (Minutes)
Keynote speech	Conference (缩写：Conf.)	Leaders of the area	Wide	Most attendees	30-60
Plenary speech	Conf.	Leaders of the area	Wide	A large portion of attendees	30-45
Tutorials	Conf. or short courses	Experts working in the area	Integrating a series of close topics	People who want to know the area	180-360
Invited talk	Conf. or academic visit	Experts with recognized results	One specific topic or area	People who is interested in or studies the topic.	15-30
Paper presentation	Conf. or group discussions	Authors	Some specific problem	People who work closely to the topic	15-20
Academic talk	Academic visit	Researchers in general	Flexible Similar to paper presentation	Scholar & students in host affiliation	30-45

Outline

- ☐ **Categorization of Technical Presentation**

- ☐ **Diverse Technical Presentations**

- ☐ **Academic Talk in a Nutshell**

- ☐ **Brief on Working Report**

- ☐ **Brief on Thesis Defense**

Paper Presentation & Academic Talk

□ They have similar natures on contents, coverage range, length, style, etc.

□ For simplicity, we refer them together as "academic talk".

□ We next focus on the guideline and tips including:

- Academic talk's typical PPT outline
- Guidelines for each section
- Tips during presentation

Academic talk's typical PPT outline

1. Title Page
2. Outline
3. Background
4. Motivation
5. System Model
6. Process/Method/Scheme/Protocol
7. Results & Discussions
8. Summary/Conclusion
9. Acknowledgement

Note: 1) 3 and 4 can be combined;
*   2) Requirements on system model varies for different discipline and areas.*

Title Page

- What does title page include?
  - **Title of the talk**
  - **Authors' information**
    - Name of the speaker and co-authors/co-contributers
    - Affiliations
    - Contact E-mail (optional, but recommended)
  - **Other information**
    - Date
    - Funding that support this work (optional)
  - **Some pictures to decorate your page**
    - Logo of your affiliation (optional)
    - Work related pictures (optional)
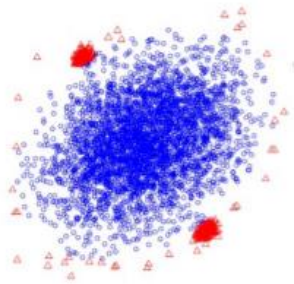
Example of Title Page

Statistical Delay Control and QoS-Driven Power Allocation Over Two-Hop Wireless Relay Links
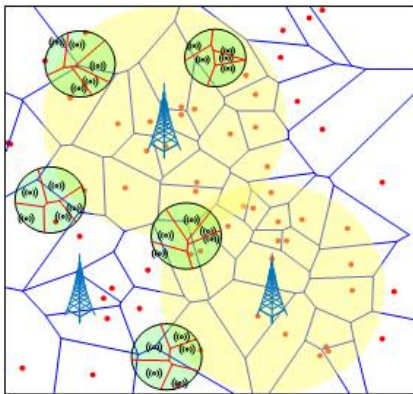
Qinghe Du, ***, ***, and ***
Xi'an Jiaotong University

Example of Title Page

Big-Data Driven Anomaly
Detection in Mobile
Wireless Networks

******

School of Electronic & Info. Engineering
Xi'an Jiaotong Unviersity

June 2018

Tips for Presenting Title Page

- Title page serves for the opener:
  - Thank the session chair to introduce you
  - Introduce yourself and work
  - Introduce your co-author/co-contributer
  - Thank the funding agency (optional)

  Example:
  - Thanks for the introduction by the Chairman. I'm *** from Xi'an Jiaotong University. The tile of my talk is " **** ". This work is coauthored with my colleagues ***, …, and ***. Research reported in my talk is supported by ******.

Outline Page

□ Outline includes the content of your talk in a brief, logical, and clean manner.

- 5-6 items maximum
- Each item occupies one line (keep it brief)
- Do not leave huge blank

Example:

bad   **bad**   **good**

Outline

- Background and motivations
- System model
- Queue-aware spectrum sensing
- Simulation evaluations
- Conslusions

Outline

- Background and motivations
- System model
- Our Proposed Queue-aware spectrum sensing framework
- Case Study for Scenarios with infinite/finite
- Theoretical analyses
- Simulation evaluations
- Discussions
- Conslusions

Outline

- Background and motivations
- System model
- Queue-aware spectrum sensing framework
- Analyses for scenarios with infinite/finite
- Simulation evaluations
- Conslusions

Tips for presenting outline

- ☐ Do not read or cover everything

- ☐ Can be simple or comprehensive

Example

1. A comprehensive one：

It's the outline of the talk. We first introduce the background and motivation of our research. Then, let's get into system model, followed by queue-aware sensing framework. Analyses for several scenarios are to be presented, compared with simulation results.

2. A extremely simple one:

It's the outline of the talk. Let us first discuss the background and motivation of our research.

Outline

- ☐ Background and motivations
- ☐ System model
- ☐ Queue-aware spectrum sensing framework
- ☐ Analyses for scenarios with infinite/finite
- ☐ Simulation evaluations
- ☐ Conslusions

Either is fine, depending how much time you have!

Background and Motivations Page

□ **Background needs to address:**

- The current progress of the research community

- This reported work discusses an important topic

- This reported work is timely

□ **Motivations need to address:**

- **Issues/problems** exist or unsolved by the current/existing approach?

- The causes or **root reasons** of these issues/problems

- Very briefly about **how we will deal** with them and show the performance

Background and Motivations Page

- **Tips for presenting background:**
  - Generally speaking, be brief
    - For a **very popular** topic, be extremely brief, because it is well-known
    - For a **less popular** topic, elaborate it on a bit
- **Tips for presenting motivations:**
  - PPT
    - Use figures/diagrams to better show your **insights**
    - Sometime animation helps
  - Presenting
    - Do not criticize existing work too much
    - Give audience the clue and direction of your work
    - Make sure your insights are clearly conveyed

Background and Motivations Page

- **Example sentences for background and motivations**
  - *** has been regarded as a promising method, which attracts the global-wide research attention. … A focus has been placed on…. (Show the timeliness importance)
  - *** has been recognized as a widely open-cited problem (Lead to your work)
  - In this work, we will report a combined (important/novel) approach to dramatically raise…(Anounce the approach as well as the performances)
  - In this work, we develop a xx model to investigate… (Anounce the approach)

System Model Page

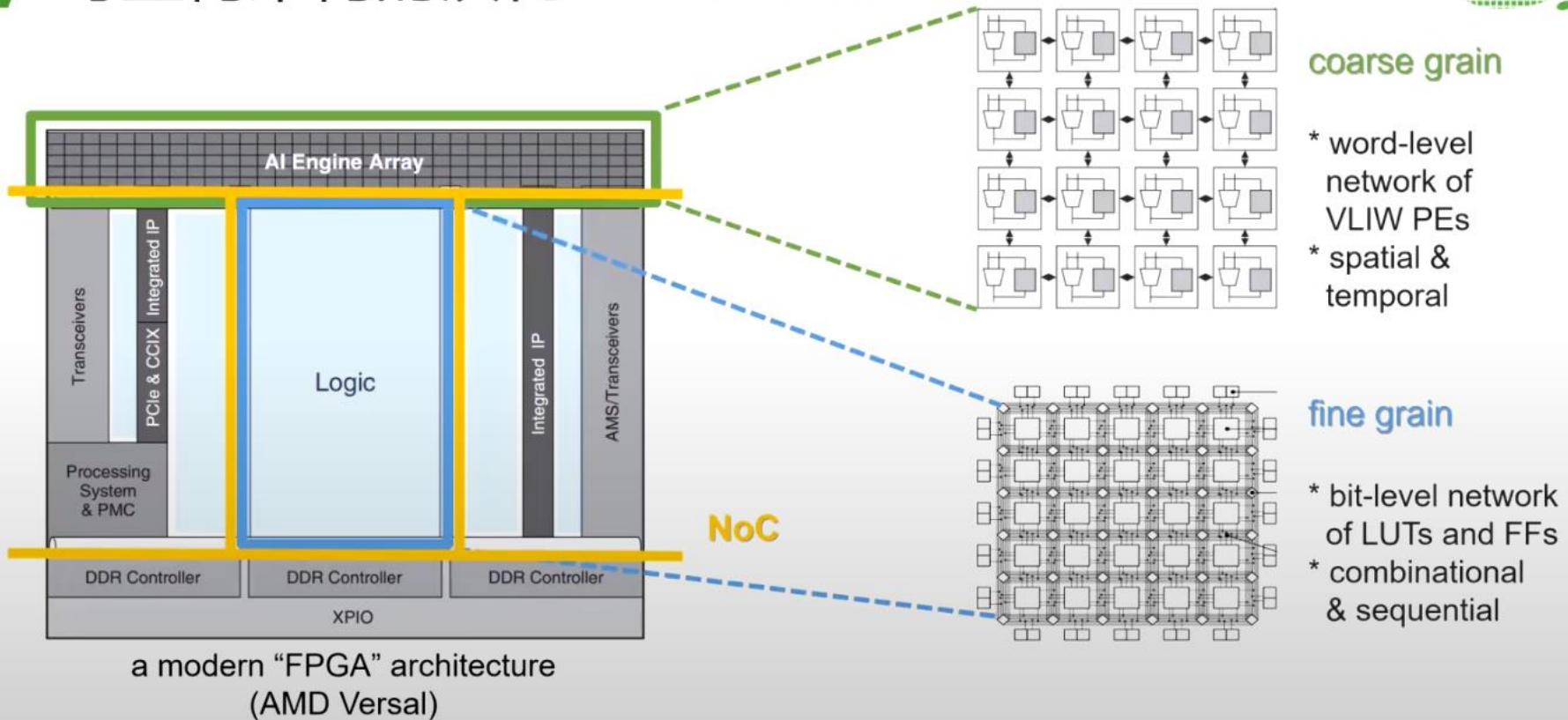□ **What does system model show**

- The large picture of the system

- Key components

- Key assumptions

- Key variables

□ **Tips for system model**

- Use figures, and sometime animations

- Do not include too many elements in this pape

- Use text to explain the key elements in figures

Example of System Model Page

可重构架构的演化 FPGA+CGRA

coarse grain

* word-level network of VLIW PEs
* spatial & temporal

AI Engine Array

Transceivers

PCIe & CCIX | Integrated IP

Logic

Integrated IP

AMS/Transceivers

Processing System & PMC

NoC

DDR Controller

DDR Controller

DDR Controller

XPIO

a modern "FPGA" architecture
(AMD Versal)

fine grain

* bit-level network of LUTs and FFs
* combinational & sequential

Process/Method/Scheme/Protocol Page

- **The style can be very flexible**
- **Some tips for PPT:**
  - Use color in figures
  - Use animation if necessary
  - Important parameters need to be listed
  - Use various highlight tools to help you address
- **Some tips for presenting:**
  - Synchronize your voice with animation
  - Do not cover too much details

  Note: The best way to examine your presenation is to see whether audience understand

Comment on the following slides
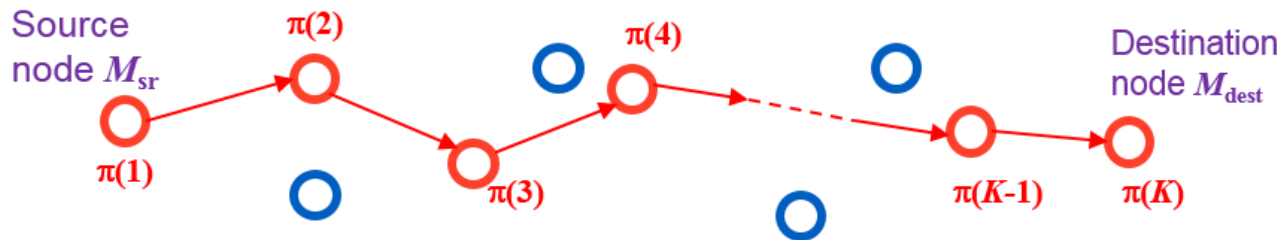
Good in general

- ☐ **Figure is clear**
- ☐ **Use Highligt**
- ☐ **Key items explained**
- ☐ **Not too much detailed information**

24

Comment on the following slides

Not so good

- ❑ **Too much info**
- ❑ **Figure is small**
- ❑ **Too much high light**
- ❑ **Hard to get the idea**
- ❑ **Too crowded**
- ❑ **…**

25

Comment on the following slides

Baseline: CD Routing Algorithm

❖ **Closest to Destination Routing Algorithm:**

Node $\pi(k)$

Destination node M_{dest}

Choose the node closest to destination!

$$\pi(k+1) = \arg \min_{u \in \mathcal{N}_k} \left\{ d_{\pi(k), M_{\text{dest}}} \right\}$$

2019/2/13   Xi'an Jiaotong University, China   14/15
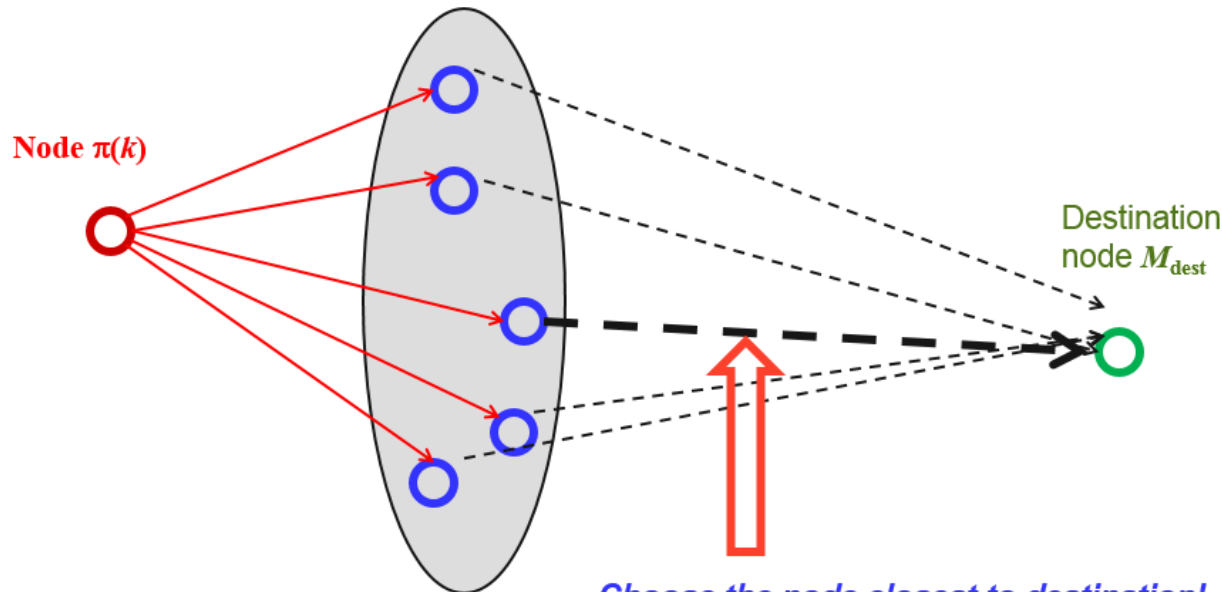
Pros:

- ☐ **Neat**
- ☐ **Key items explained**
- ☐ **Less text**

Cons:

- ☐ **Better to have animation**

Results & Discussions Page

- **Tips for PPT**
  - Need to list parameters of evaluation environments
  - Less text: Figures + Key information/comments
  - Not all results, put important results.
  - Not too crowded

- **Tips for presenting**
  - Explain the experiment setting
  - Explain the baseline/comparative results first
  - Explain the improved results later
  - Repeat the importance

Comment on the following slides

Simulation evaluations (1)

- **MR-D Routing** **BS** **FN Routing**
- **Dijkstra** **CD Routing**

- **Source** **UE** **Desination**
- **D2D nodes** $N = 60$
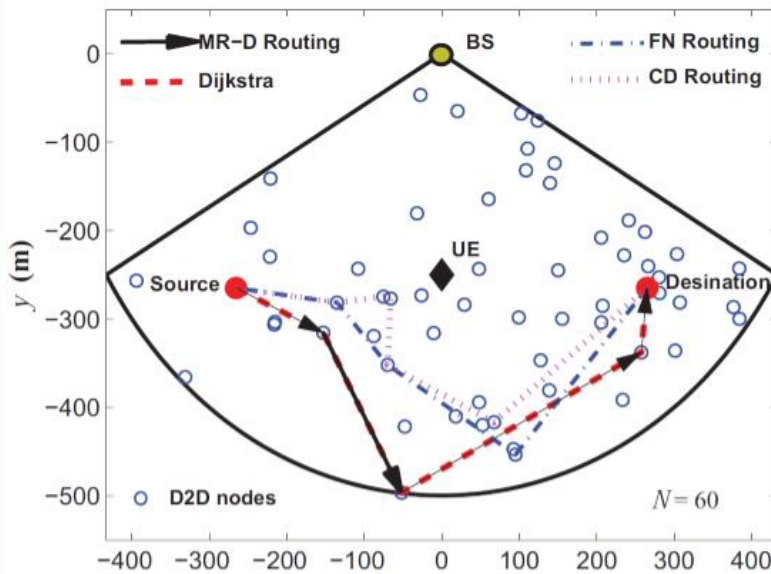
$R_{th} = 2$ Mbps
$A = 5e-6$
Noise power: -111 dBm

➤ Topology:
- The BS covers a sector with angle equal to $2\pi/3$ and with radius equal to 500 m.
- Positions of BS, UE (cellular user), source node, and destination node are fixed as in figures.
- Other D2D nodes are uniformly distributed within the sector.

➤ Path-loss exponent: 3
➤ Transmit Power: 23dBm
➤ Tolerable SINR threshold: 8 dB

2019/2/13 Xi'an Jiaotong University, China 16/15

Pros:

- ☐ **Figure is clear**
- ☐ **Important parameters are given**

Cons:

- ☐ **Too much text**
- ☐ **Simulation parameters can be listed in a table**

Comment on the following slides

Result calibration（2）

Abnormal results detected in [1]

Date	Square_ID	Time	Activity
12/1/2013	5638	14:00	458.258
12/2/2013	5638	15:00	365.670
12/3/2013	5639	14:00	713.012
12/3/2013	5639	15:00	573.832
12/3/2013	5640	14:00	627.117
12/3/2013	5640	15:00	501.914
12/3/2013	5640	16:00	419.929
12/4/2013	5639	21:00	344.277
12/4/2013	5640	21:00	183.173

Match

Test set data (19-day sample)

Training set data (44-day sample)

We find abnormal results in the 5638 area, 2 pm - 3 pm

+ User activity intensity sample
O Detected abnormal samples

December 1st: Football match

User activity intensity
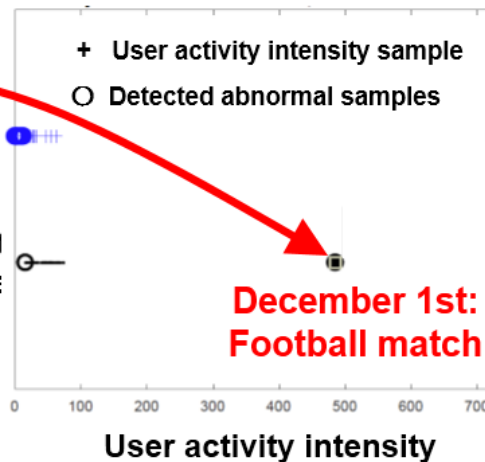
In conclusion:
- Our results are consistent with [1].
- We can monitor more anomaly behaviors than [1]:
  - ✓ surge anomaly monitoring
  - ✓ dormancy monitoring.

28/45

Pros:
- ☐ **Comparative style**
- ☐ **Not so crowded**
- ☐ **Conclude results in less text**
- ☐ **Use highlight tools**

Cons:
- ☐ **Color can be adjusted**

Comment on the following slides
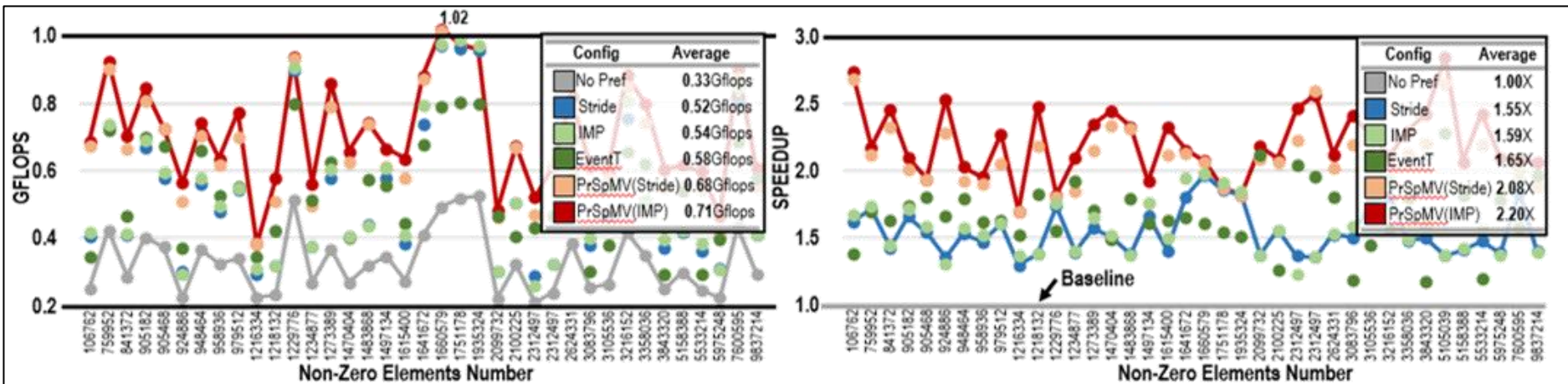
PrSpMV can efficiently **improve the performance of existing prefetchers**
Stride prefetcher with PrSpMV can be boosted with **1.31x** speedup and dedicated prefetcher can be improved with **1.40x** speedup

Pros:

- ❑ **Comparative style**
- ❑ **Not so crowded**
- ❑ **Conclude results in less text**
- ❑ **Use highlight tools**

Cons:

- ❑ **Color can be adjusted**

Summary

- **Tips for PPT:**
  - Short sentences
  - Summarize:
    - What we have done
    - What are the contribution
    - How are the performances
    - Future work
- **Tips for presenting**
  - Do not read literally word by word
  - Repeat important results
  - Connect to acknowledgement

Summary

☐ **Give links for your previous works or open-source repos.**

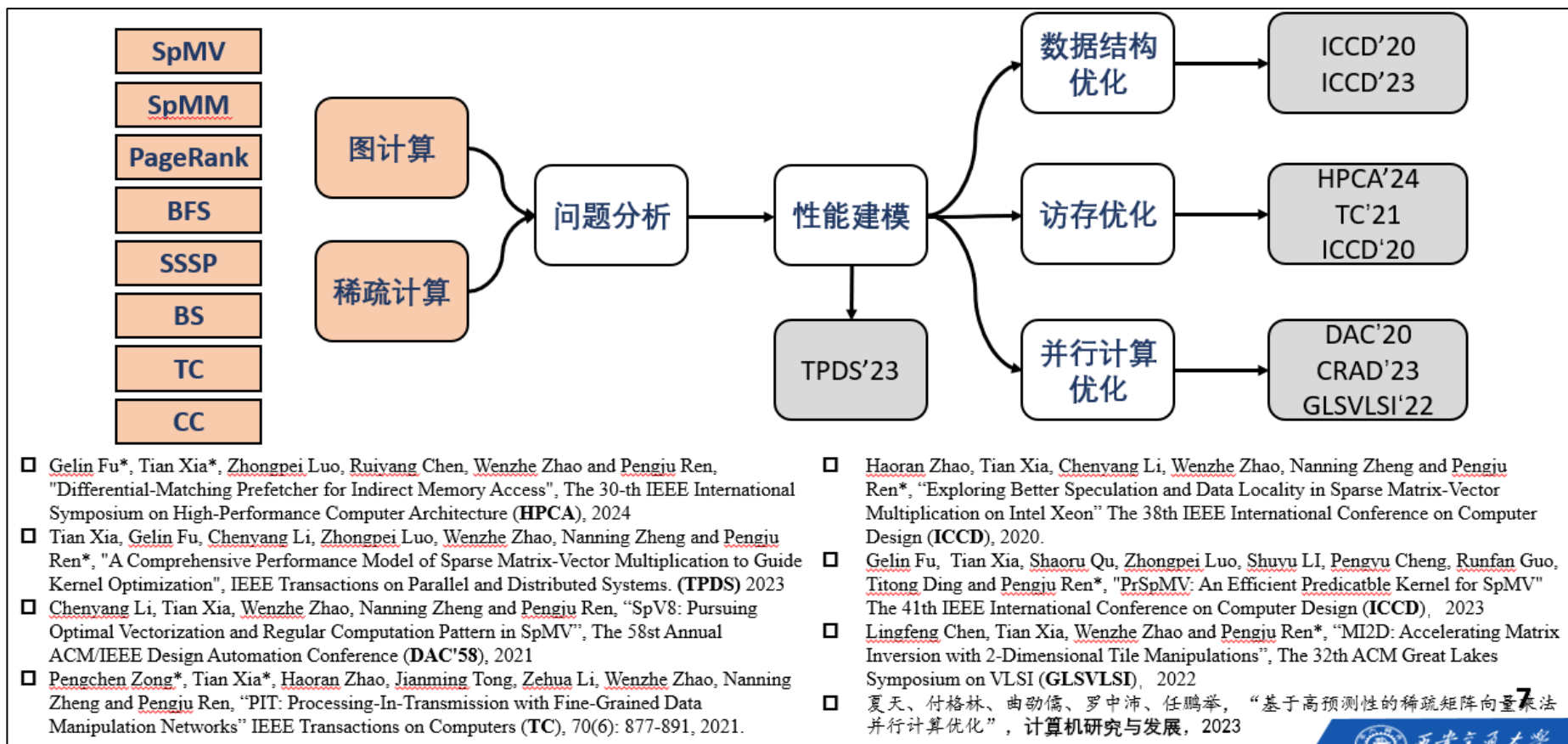☐ Gelin Fu*, Tian Xia*, Zhongpei Luo, Ruiyang Chen, Wenzhe Zhao and Pengju Ren, "Differential-Matching Prefetcher for Indirect Memory Access", The 30-th IEEE International Symposium on High-Performance Computer Architecture (**HPCA**), 2024

☐ Tian Xia, Gelin Fu, Chenyang Li, Zhongpei Luo, Wenzhe Zhao, Nanning Zheng and Pengju Ren*, "A Comprehensive Performance Model of Sparse Matrix-Vector Multiplication to Guide Kernel Optimization", IEEE Transactions on Parallel and Distributed Systems. (**TPDS**) 2023

☐ Chenyang Li, Tian Xia, Wenzhe Zhao, Nanning Zheng and Pengju Ren, "SpV8: Pursuing Optimal Vectorization and Regular Computation Pattern in SpMV", The 58st Annual ACM/IEEE Design Automation Conference (**DAC'58**), 2021

☐ Pengchen Zong*, Tian Xia*, Haoran Zhao, Jianming Tong, Zehua Li, Wenzhe Zhao, Nanning Zheng and Pengju Ren, "PIT: Processing-In-Transmission with Fine-Grained Data Manipulation Networks" IEEE Transactions on Computers (**TC**), 70(6): 877-891, 2021.

☐ Haoran Zhao, Tian Xia, Chenyang Li, Wenzhe Zhao, Nanning Zheng and Pengju Ren*, "Exploring Better Speculation and Data Locality in Sparse Matrix-Vector Multiplication on Intel Xeon" The 38th IEEE International Conference on Computer Design (**ICCD**), 2020.

☐ Gelin Fu, Tian Xia, Shaoru Qu, Zhongpei Luo, Shuyu LI, Pengyu Cheng, Runfan Guo, Titong Ding and Pengju Ren*, "PrSpMV: An Efficient Predicatble Kernel for SpMV" The 41th IEEE International Conference on Computer Design (**ICCD**), 2023

☐ Lingfeng Chen, Tian Xia, Wenzhe Zhao and Pengju Ren*, "MI2D: Accelerating Matrix Inversion with 2-Dimensional Tile Manipulations", The 32th ACM Great Lakes Symposium on VLSI (**GLSVLSI**), 2022

☐ 夏天、付格林、曲劲儒、罗中沛、任鹏举，"基于高预测性的稀疏矩阵向量算法并行计算优化"，**计算机研究与发展**，2023

7

Summary

☐ **Give links for your previous works or open-source repos.**

Summary

Contribution:
- A **hardware prefetcher** for IMA
- Use **differential matching** to detect IMA
- Achieve **2.1X speedup**

Welcome to try our code!

Github opensource : https://github.com/xjtuiair-cag/gem5_dda

Acknowledgement

- **If you did not give Acknowledgement in the title page, please do it here.**

- **PPT not necessarily here**

- **Who will be thanked**

  - **Funding agency**

  - **Co-contributor**

- **The final page:**

  - **Can simply write "Thanks for attention !"**

Other Tips for Speakers

- Tips for Presenting
  - Use some words, phrases, sentences to help the transition between pages and sections
  - Control the time
  - Interaction with audience
- Tips for Preparation
  - More practice leads to smoother presentation
  - Ask suggestions from other people
  - Interaction
  - Note on important transition words among pages

Guidelines for Posters

- An interactive way to introduce your paper

- Print a poster to introduce your paper

- You stand by your poster board, answering other attendees' questions.
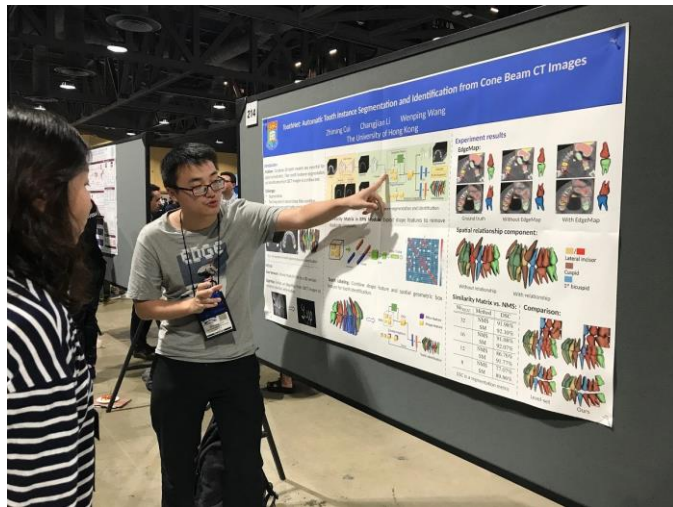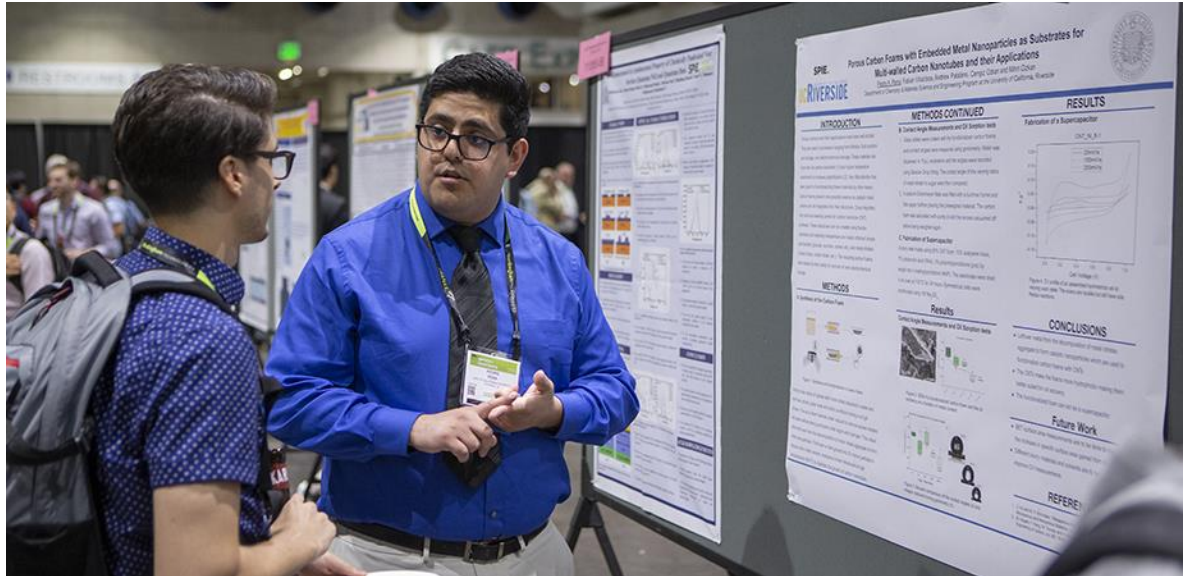
HOW TO DESIGN AN AWARD-WINNING CONFERENCE POSTER

Dr. Tullio Rossi

#1 SCRIPTING

- YES to bullet points - NO to long paragraphs.
- Use sections with HEADERS.
- Maximum 250 words! Possibly <150.
- Don't forget your contact information.
- Make sure your poster is telling a story that includes:

Background   **Question**   **Methods**   **Results**   **Conclusions**

#2 DESIGN

- Decide a layout before you start designing.
- Negative space is your friend. 40% should be blank.
- Use 3 to 5 colors.
- Use 1 accent color to draw attention.
- NO to images and patterns as background.
- Use 1 to 2 fonts - readable from 1 m.
- Feel: More like an infographic less like a scientific poster.

Include one large eye-grabbing visual

#3 DATA

- Display only the essential.
- Simplify graphs to make them easier to read.
- Apply the color scheme to the graphs for consistency.

Developing and characterising a novel combined nanoelectrode system

L. P. Robinson, A. Mount

THE UNIVERSITY OF EDINBURGH

Electrochemistry at nanoelectrodes

Nanoelectrodes have several advantages for electrochemical sensing.

Linear diffusion profile

Transport to macroelectrodes proceeds through a relatively inefficient linear diffusion profile. They are also are highly affected by convection and iR drop.
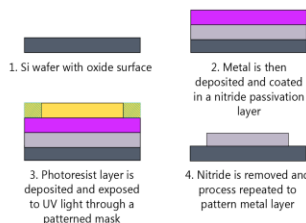
In contrast, the diffusion pattern for nanoelectrodes quickly becomes hemispherical. This profile is much more efficient, and they are not so affected by convection or iR drop. They can reliably detect very low (attomole) concentrations of analyte.

Hemispherical diffusion profile
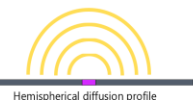
A Pt microsquare nanoband edge electrode (MNEE) array electrode in which the Pt nanoband acts as the working electrode has been developed. The project now aims to create a nanoelectrode device based on this system which has all three electrodes necessary for analysis on one chip.

Fabrication

This design has been fabricated at the Scottish Microelectronics Centre using photolithography. In this technique layers of metal and insulator are deposited and patterned to produce the desired arrangement.
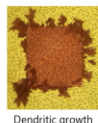
1. Si wafer with oxide surface

2. Metal is then deposited and coated in a nitride passivation layer

3. Photoresist layer is deposited and exposed to UV light through a patterned mask

4. Nitride is removed and process repeated to pattern metal layer

Each layer is deposited and patterned sequentially. This approach reliably produces uniform electrodes cheaply and easily.

Combined nanoelectrode system

This design consists of a microsquare at the bottom of each cavity in the array, with the nanoband around the cavity edge.

The Ag/AgCl microsquare is a combined reference and counter electrode. As its area is so much larger than the Pt nanoband, the current passing through the square is not large enough to affect its use as the reference electrode.

This could create an on-chip device for sensitive analytical detection.

Ag/AgCl as a combined electrode

The combined reference/counter electrode is created by electroplating a thin film of Ag onto the Pt microsquare.

Dendritic growth

Potentiostatic plating causes Ag to grow preferentially at the corners, creating dendrites. A galvanostatic plating protocol is being developed to provide the required smooth, shiny Ag deposit.

To convert the newly plated Ag surface to AgCl, it must be functionalised. Chemical functionalisation by immersion in $FeCl_3$ has been shown to produce uniform deposits of AgCl.

Characterisation

Cyclic voltammetry and electrochemical impedance spectroscopy will be used to verify that the system is behaving as predicted. The nanoband should have a similar reponse to the current nanoelectrode array.
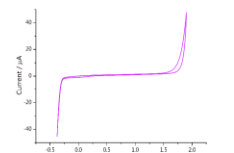
Example of a nanoelectrode cycling in 100mM KCl solution. This cycle is used to determine the cleanliness of the electrode surface.

An application

By coating the surface of the working electrode in a probe nucleic acid, the corresponding DNA sequence can be detected using electrochemical impedance spectroscopy (EIS). Before the target molecule is hybridised, the resistance measured for the redox couple is small. When the correct target is hybridised the resistance, and therefore the EIS reponse, is much larger.

Pre hybridisation - the redox species has access to the electrode.

Post hybridisation - the access of the redox species is restricted, and so the resistance rises at the electrode.

EIS measurement of 50 nm electrode shows the increase in resistance upon addition of the target nucleic acid.

Objectives

Having made the initial measurements, the next steps will include;

- complete fabrication of the combined system, including optimisation of nanoband and cavity dimensions
- further investigation of the sensitivity of nanoelectrodes for use in DNA sensing and the relationship between the response and concentration of the target
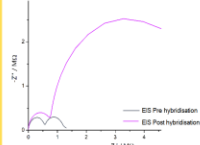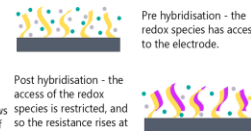- optimisation of a galvanostatic silver plating protocol

Many thanks to Dr Damion Corrigan, Ilka Schmueser, Professor Andy Mount, the Mount group and the SMC for their continuing support and expertise.

SMC

EPSRC Pioneering research and skills

Investigation of the roles of anti-VEGFR1 natural antibodies in human plasma in hepatocellular carcinoma

C. Rodgers, A. Pritchard, J.Wei

University of the Highlands and Islands
Oilthigh na Gàidhealtachd agus nan Eilean

(Control No. 2018-A-1528-ECI)

Introduction

Natural antibodies can be defined as polyreactive immunoglobulins produced by B1 lymphocytes in the absence of exogenous antigen stimulation. They are physiologically involved in maintaining tissue homeostasis, such as clearance of apoptotic cell debris, elimination of invading pathogens as well as destruction of cancer cells formed in the body.

?

- Are there circulating IgG antibodies, present in human plasma, that recognise the reported over-expressed VEGFR1 and FGFR2?

- Are these circulating IgG antibodies capable of recognising VEGFR1 or FGFR2 over-expressed by liver cancer cells?

- If yes, what effect do they have on liver cancer cell growth?
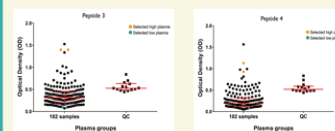
Results

Gene expression

VEGFR1 expression in liver cancer cell lines

Peptide design
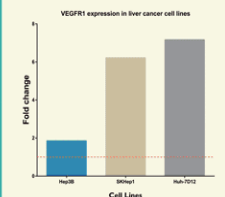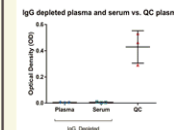
Antigen and secondary antibody optimization

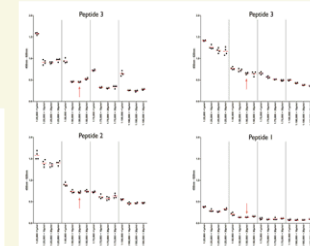### Screen for plasma high in anti-VEGFR1 IgG

An in-house ELISA with five synthetic VEGFR1-derived peptides was used to screen for human plasma high and low in anti-VEGFR1 IgG antibodies.

IgG depleted plasma/serum vs. QC plamsa

IgG depleted plasma and serum vs. QC plasma

Conclusion

- Expression levels of VEGFR1 differ between liver cancer cell lines

- Circulating anti-VEGFR1 IgG levels differ from person to person

Future work

What effect do natural anti-VEGFR1 IgG have on liver cancer cells?

- **CCK-8 assay** - to infer the number of viable cells after treatment with high anti-VEGFR1 IgG plamsa.

- **Anti-cancer mechanism** - apoptosis, autophagy, luciferase reporter assay, and transwell migration.

References

I.BRAHIMI-NEZHAD, S. JAZAYERI, M., HASSANIAN, S. M. & AVAN, A. 2017. Current Status and Prospective Regarding the Therapeutic Potential of Natural Autoantibodies in Cancer Therapy. J Cell Physiol, 232, 2649-2652.

NAGELE, E. P., HAN, M., ACHARYA, N. K., DEMARSHALL, C., KOSCIUK, M. C. & NAGELE, R. G. 2013. Natural IgG autoantibodies are abundant and ubiquitous in human sera, and their number is influenced by age, gender, and disease. PLoS One, 8, e60726.

WANG, Y., YAN, Z., HUANG, Y., QIU, C., CHEN, X., HU, Y., MENG, Q. & WEI, J. 2017. Study of natural IgG antibodies against vascular endothelial growth factor receptor 1 in hepatocellular carcinoma. Am J Cancer Res, 7, 603-609.

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Outline

- **Categorization of Technical Presentation**

- **Diverse Technical Presentations**

- **Academic Talk in a Nutshell**

- **Brief on Working Report**

- **Brief on Thesis Defense**

Guidelines for Working Report

- ❏ **Main sections**
  - ● **Introduction**
    - ➢ Briefly review the work of last stage
    - ➢ Briefly show the goal and schedule of work in this stage
  - ● **Progress**
    - ➢ What you have achieved?
    - ➢ What are the performance?
    - ➢ How did you achieved it? (Sometime not important)
  - ● **Issues**
    - ➢ Ask your superior or boss for more resources
    - ➢ Show the problem cannot be reconciled
  - ● **Next plan**
    - ➢ Target needs to be clear, yet feasible
    - ➢ List specific schedule, and show it is doable

Keep it simple and effective! Avoid complex animation or fancy figures, unless necessary.

Outline

- **Categorization of Technical Presentation**

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Guidelines for Thesis Defense

- ❑ **Typical outlines**
  - ● Cover/title page
  - ● Outline page
  - ● Background
  - ● Main Research Work
    - ➤ Systematic integration of multiple work
    - ➤ Well organize the order
    - ➤ Need to show the relationship among the multiple work
  - ● Conclusions
    - ➤ Novelty
    - ➤ What kind of conclusion can we draw
    - ➤ Future work direction (optional)
  - ● Q&A (Questions and Answers)
    - ➤ Reply to reviewers comments via PPT
    - ➤ Reply to on-site comments

Thank you !