

# Computer Science and Engineering in Global Context



# Introducing CSE ...

**Computer Science** : Study and analysis of the theoretical foundations of information and computation.



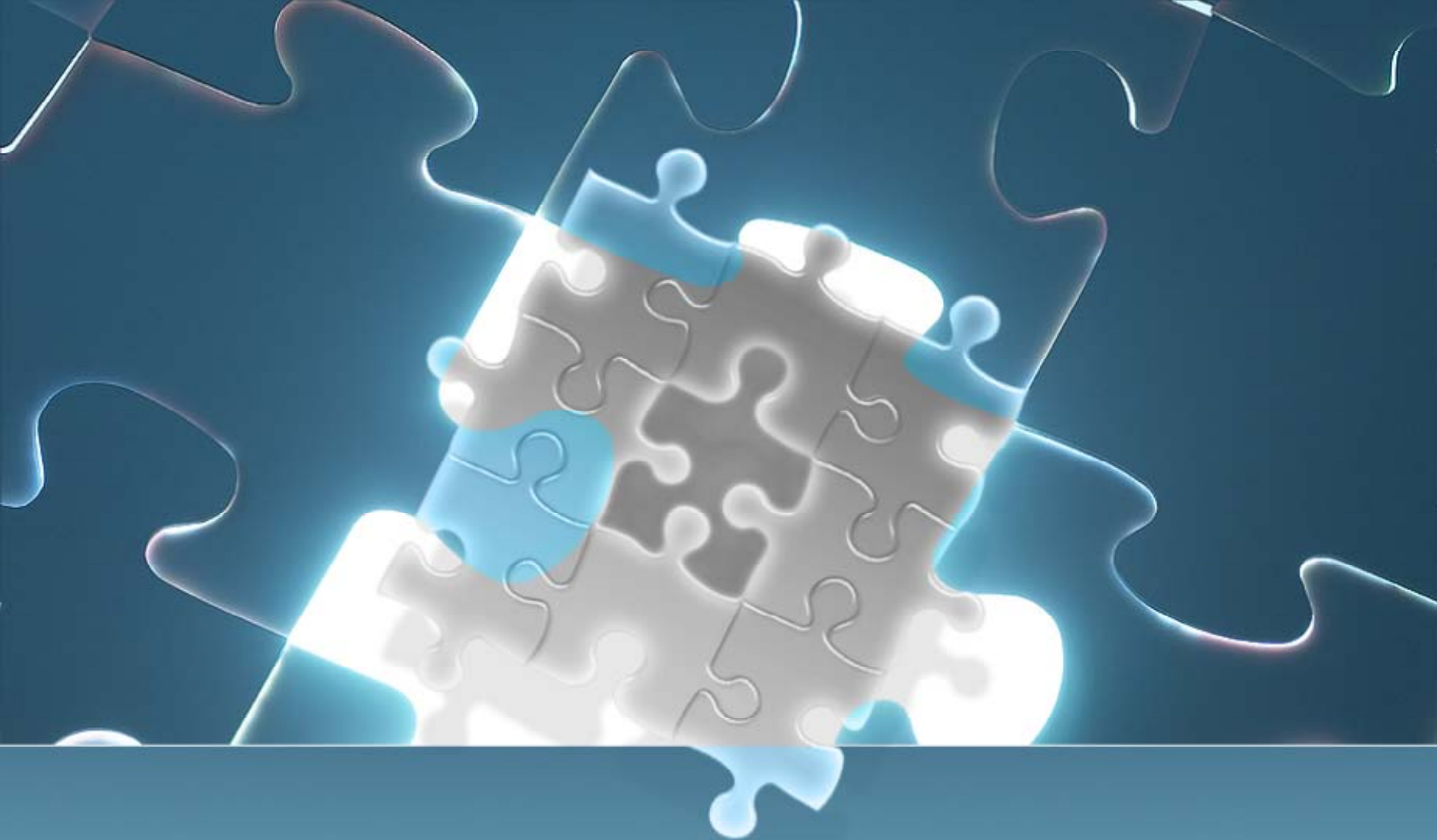
**Computer Engineering** : Study of design, efficiency, implementation and useful application of computational models, knowing the limitations and developing ingenious solution to overcome these.

 **Computer Science and Engineering**



# Impacts

- Commercial application
  - Banking
  - Enterprise Resource Planning
  - E-commerce, E-governance
- Scientific research
  - Biomedical equipments
  - Medical Diagnosis-image processing
  - Statistical analysis
  - Simulation modeling



# *Global Context of CSE*



# World Ranking

- According to 'FastCompany' top jobs for 2005-2009
  - Computer software engineer is ranked 3<sup>rd</sup> following
    - Personal finance adviser
    - Medical scientist

	Software engineer	Finance adviser	Medical scientist
Job Growth Index	61.24	58.71	45.68
Education Index	70.80	82.31	98.28
Salary Range Index	69.67	87.95	60.00
Innovation Index	38.00	0.00	96.00



## In US (Employment)

- Computer Engineers 507,000
- Self-employed 66,000
- Network & data communication analysts 46%
- Database administrators 21%
- Computer and information scientists 4%
- Computer specialists, all other 29%



# In US (Salary)

## Computer Engineers:\*

- Average \$85,190
  - 50% earned between \$64,860 and \$108,440.
  - Highest 10% earned > \$132,700.
- 
- Biological scientist\*\* \$61,317
  - College professor\*\* \$81,491
  - Financial advisor\*\* \$122,462

\*<http://stats.bls.gov/oco/ocos042.htm>

\*\*<http://money.cnn.com/>



# In Asia (Salary)

## India: \*

- Experience below 2 years \$6,400
- Average \$10,300
- Salary Rise in 5 years 11.5%

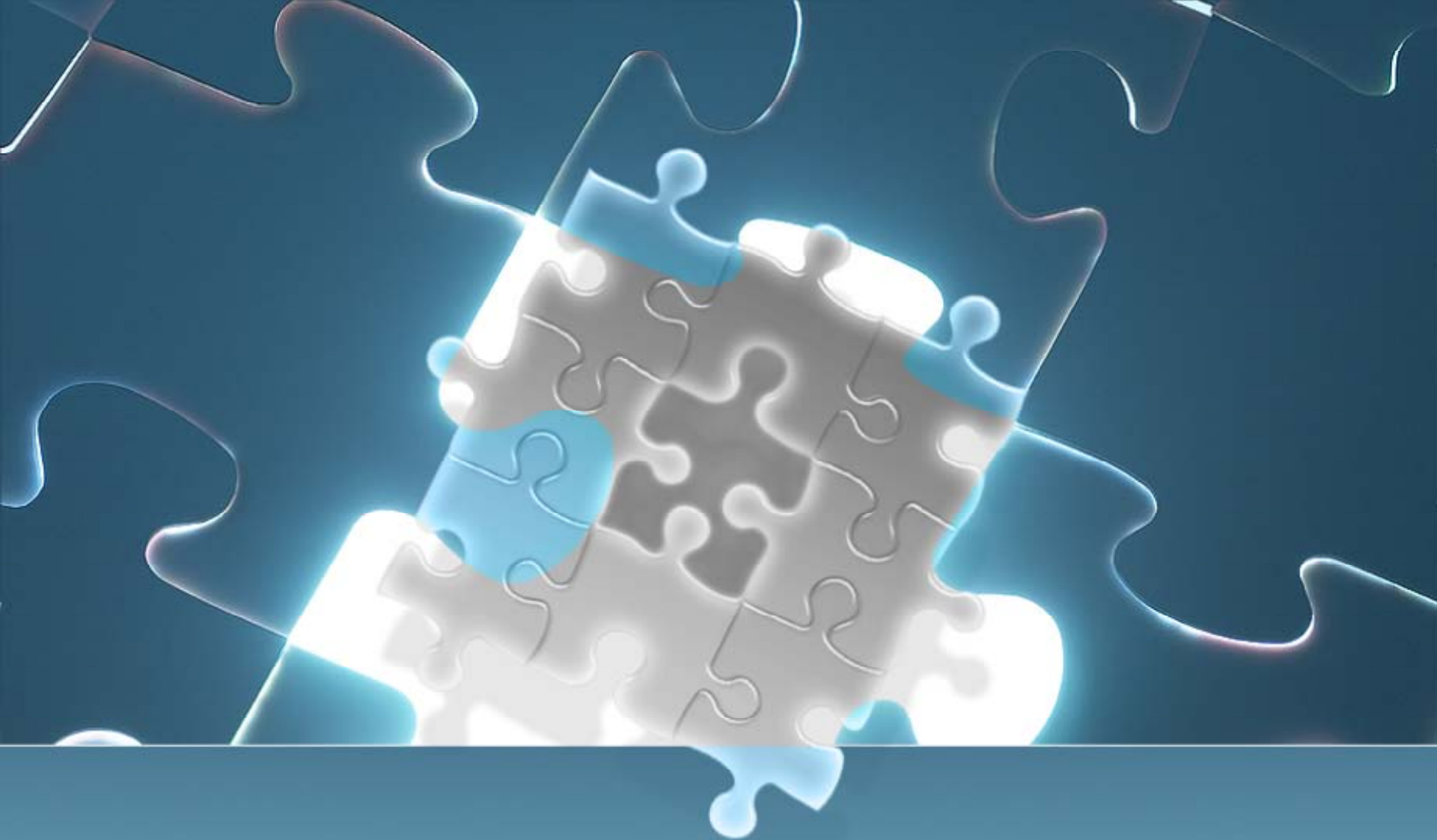
## China: \*\*

- Average \$13,400
- Salary Rise in 5 years 7.5%

\*[http://www.dqindia.com/content/top\\_stories/2005/105091201.asp](http://www.dqindia.com/content/top_stories/2005/105091201.asp)

\*\*<http://www.networkworld.com/>





*CSE @ BUET*



# General Information

## CSE @ BUET



# 1<sup>st</sup>

Department of its kind.

Creative and challenging students  
from all over the country join here.

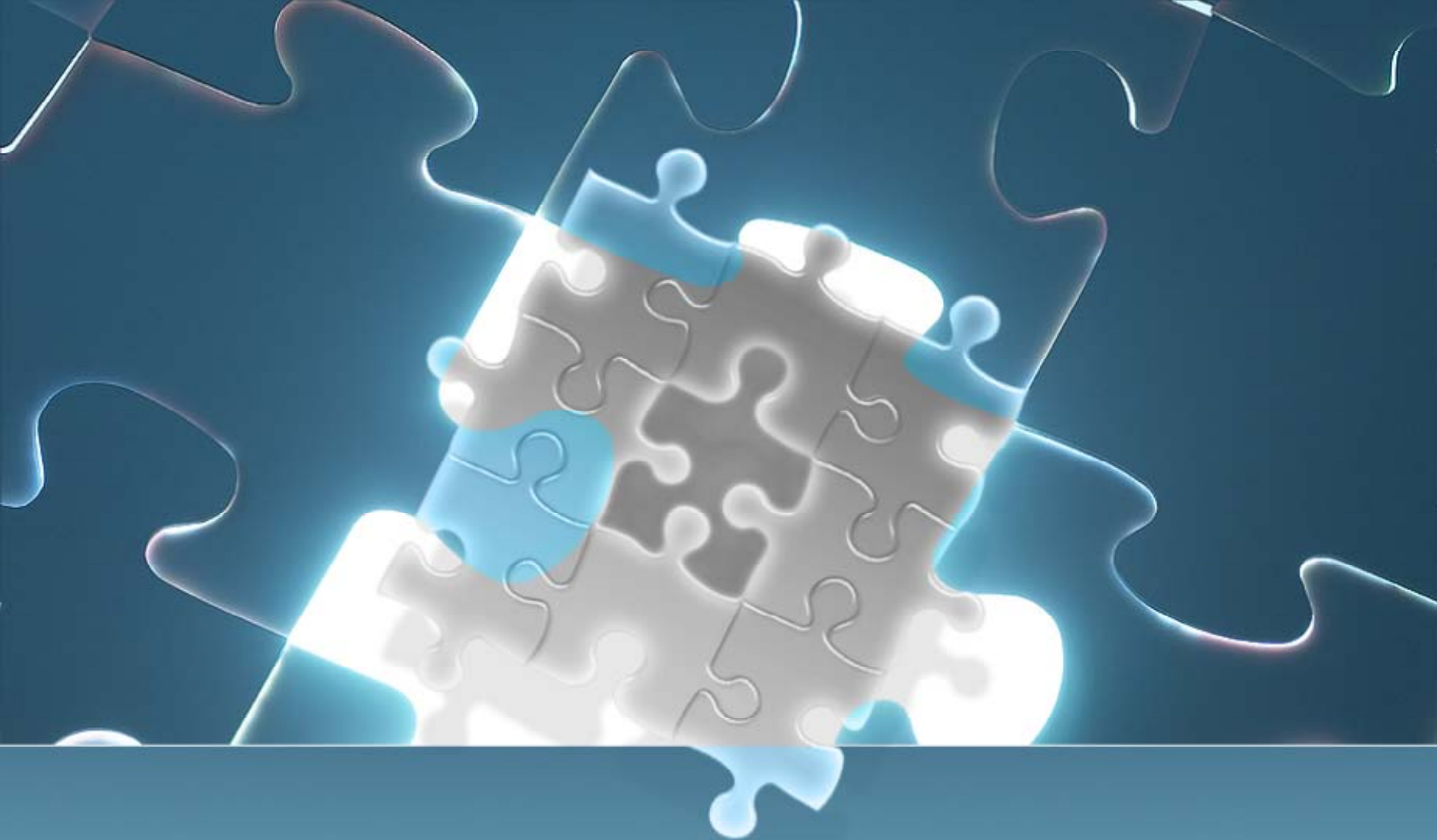


# Faculty

At present faculty consists of :

- 5 Professors
- 3 Associate Professors
- 21 Assistant Professors
- 25 Lecturers

The faculty is diverse in educational background, professional experience, and interests. We have 12 PhD holders here as faculty members.



# Research Activities



# Research Area

Since **1997** the number of publications in international conference and journals of the department **exceeds over 200\***

- Graph theory and Graph drawing,
- Parallel Algorithms,
- Networking and wireless communication
- Multimedia & Distributed systems
- Artificial Intelligence & Neural Network
- Advanced Database & Data Mining
- Image Processing and Pattern Recognition



# Renowned Journals

The teachers and students of the department have publications in various reputed international journals like

- ❑ **Journal of Algorithms,**
- ❑ Journal of Graph Algorithms and Applications,
- ❑ Journal of Heuristics,
- ❑ Theoretical Computer Science,
- ❑ Computational Geometry: Theory and Applications,
- ❑ **IEEE Transactions on Neural Networks,**
- ❑ Information Processing Letters,
- ❑ Studia Informatica Universalis,
- ❑ Telecommunication Systems,
- ❑ Int. Journal of Computer Mathematics,
- ❑ Int. Journal of Computers and Operations research,
- ❑ IEICE Transactions on Information and Systems,
- ❑ Journal of Computer Graphics,
- ❑ Applied Mathematics E-Notes etc



# Renowned Conferences

Faculty members present their research works in reputed international conferences like

- ISAAC** (International Symposium on Algorithms and Computation),
- COCOON** (International Conference on Computing and Combinatorics),
- GD** (Symposium on Graph Drawing),
- WG** (Workshop on Graph-Theoretic Concepts in Computer Science),
  
- IEEE ISISPCS** International Symposium on Intelligent Signal, Processing and Communications Systems,
- IEEE ICC** International Conference on Communications etc.
- IEEE IPCCC** International Performance Computing and Communications Conference,
- ICECE** International Conference on electrical and computer engg
- ICCIT** (International Conference on Computer and Information Technology),

# Awards

## Dr. M. Kaykobad

Professor, CSE, BUET

Has been awarded Academy Gold Medal for Senior Scientists in Physical Sciences for the year 2004\*

Received best coach award for ACM ICPC World Final 2002\*\*

Received Gold medal from Bangladesh Computer Society in 2005.

\*<http://www.buet.ac.bd/cse/news/news.php?newsid=14>

\*\*<http://acm.baylor.edu>





# Awards

## Dr. Md. Saidur Rahman

Associate Professor, CSE, BUET,  
has been awarded Academy Gold  
Medal for Junior Scientists in  
Physical Sciences for the year 2003.



He also got FUNAI Information Technology  
Award and JSPS Fellowship.



# Awards

## **Dr. Md. Monirul Islam**

Associate Professor, Department of CSE, BUET has been awarded **3** awards including **Best Paper Award** on

Joint 3rd International Conference on Soft Computing and Intelligent Systems and 7th International Symposium on advanced Intelligent Systems (**SCIS & ISIS 2006**)\*

He has achieved **JSPS** Fellowship for year 2007

\*<http://www.buet.ac.bd/cse/news/news.php?newsid=19>



# Academic Excellence

Prof. Dr. Md. Saidur Rahman ,  
Currently Faculty of our department  
has written **PLANAR GRAPH  
DRAWING** with Takao Nishizeki  
(*Tohoku University, Japan*).

*This is the first internationally recognized book  
in CS Discipline that has been written by a  
Bangladeshi.*



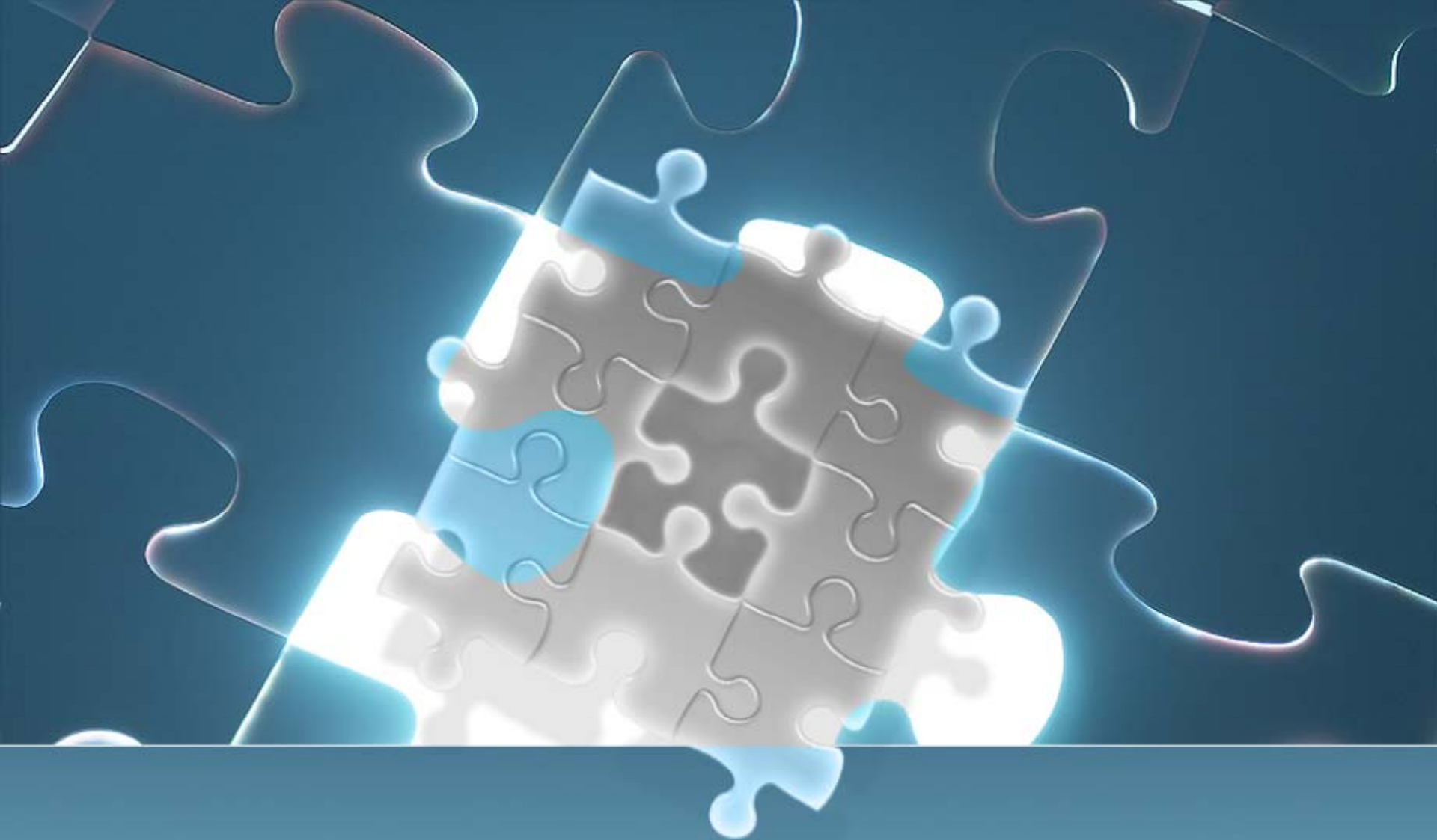
# Academic Excellence

## CSE faculty wins prestigious scholarship



### Md. Yusuf Sarwar Uddin

Assistant Professor, Dept. of Computer Science and Engineering of BUET, is a recipient of the new International Fulbright Science and Technology Award. \*



# Student Activities



# Student Research

**Rezaul Alam Chowdhury**, former faculty member, had already authored

**10** Journal and **9** conference publications when he was a student of the department.

Was awarded **Gold Medal** at ICCIT99



# Student Research

**Suman Kumar Nath**, former faculty member, had already authored

**4** Journal and **6** conference publications when he was a student of the department. \*



# Student Research

Works of several other students of cse were published in internationally renowned journals\*

...A few of them

Tarique Mesbaul Alam, Mustaq Ahmed, M M Masud, Prodipta Promethus Mitra, Arshad Ul Abedin, M Tanvir Parvez, Ziaur Rahman, Saifur Rahman, Asif Ul Haque, Mehedy Bakht, S M Shahriar Nirjon.....

\*<http://www.csebuat.org/research.html>

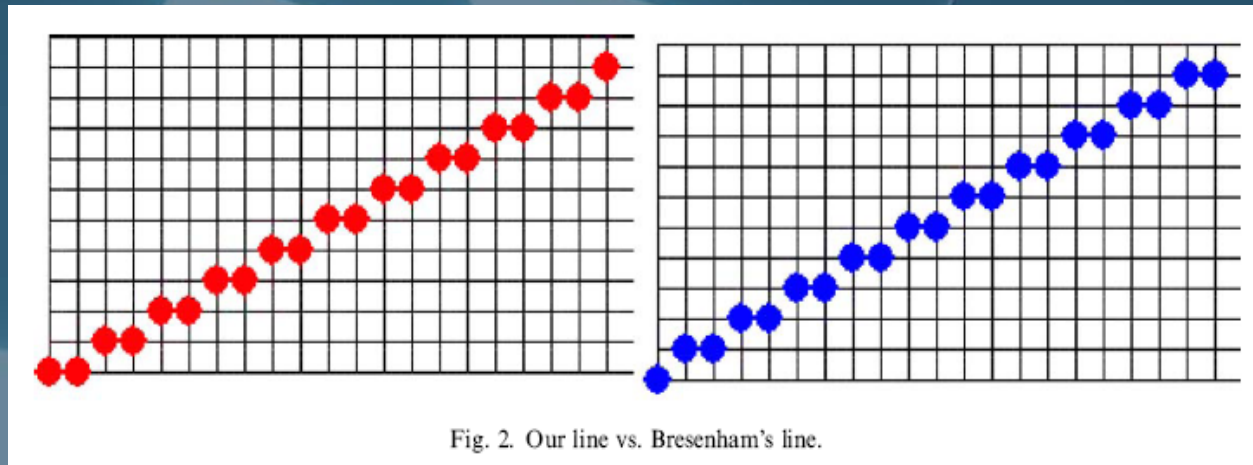




# Student Research

## "Drawing lines by uniform packing "

Asif-ul Haque, M Saifur Rahman, Mehedi Bakht and M Kaykobad,  
won the *best paper award* in  
The 7th International Conference on  
Computer and Information Technology  
(ICCIT) 2004

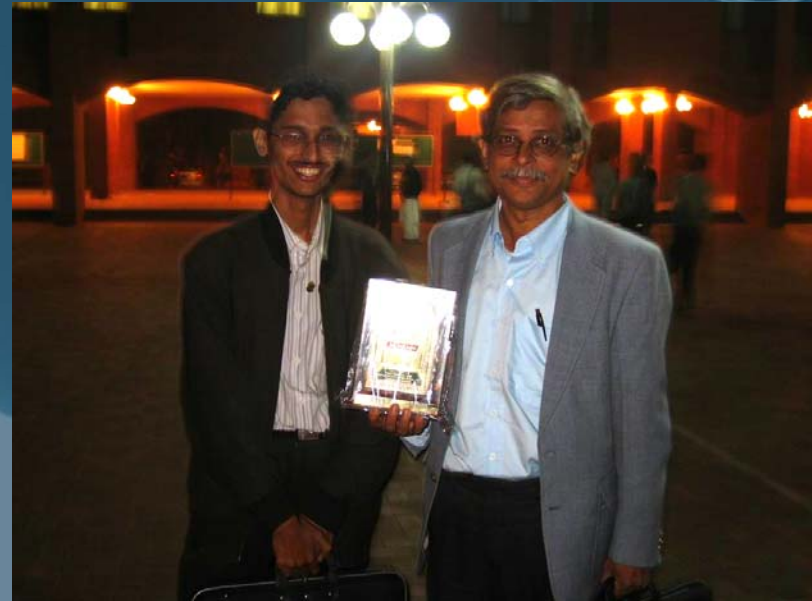




# Student Research

## "A New Web Cache Replacement Algorithm"

by Anupam Bhattacharjee  
and Biplob Kumar Debnath  
won the **Best Paper Award** in  
The 8th International Conference on  
Computer and Information Technology  
(**ICCIT**) 2005





# Student Research

Many students of our department are involved in research activities and regularly publish their works in renowned conferences and journals.





# Student Research

## **Software Design Group BUET**

- ✓ The Design Group formed in February 2003.
- ✓ The goal of the group is to work on software design techniques, patterns and tools.

## **GRAPHITE Group on Computer Graphics**

- ✓ Working on computer graphics and game development.
- ✓ Anything related to these two - from simulation, scientific visualization to modeling, from AI to virtual reality.



# Programming Contest

CSE-BUET has participated in the  
ACM International Collegiate Programming Contest  
Every year since 1998

Highly ranked in contests held at websites:


- Topcoder,
- Valladolid Online Contest.

# Best Performance at ACM



.....achieving the 11th position in the whole world in 2000.

# Comparison of ACM World Final Ranks



Year	BUET	IIT	MIT	Stanford
1998	24	X	5	24
1999	HM	X	X	HM
2000	11	HM	15	15
2001	29	29	7	14
2002	HM	HM	2	5
2003	HM	43	0	X
2004	27	HM	5	13
2005	29	29	29	X
2006	39	HM	8	X

HM: Honourable Mention  
X: Not in Ranklist

BUET outperforms IIT in most world finals.....  
In 2000, BUET outperformed IIT, MIT and Stanford...



# ACM Judge

CSE Graduate **Shahriar Manzoor**  
renowned problemsetter of ACM UVA site...  
member of Elite Problemsetters Panel.....



Judge for the world finals...

\*<http://online-judge.uva.es/problemset/>





# Programming....

BUET programmers often perform nice in **TOPCODER** site....

👤 Abdullah Al Mahmud Satej

The only **RED** Coder in Bangladesh....

👤 Manzurur Rahman Khan Sidky

placed 9<sup>th</sup> in Google India Codejam 2006

👤 Ishtiaque Ahmed Dollar

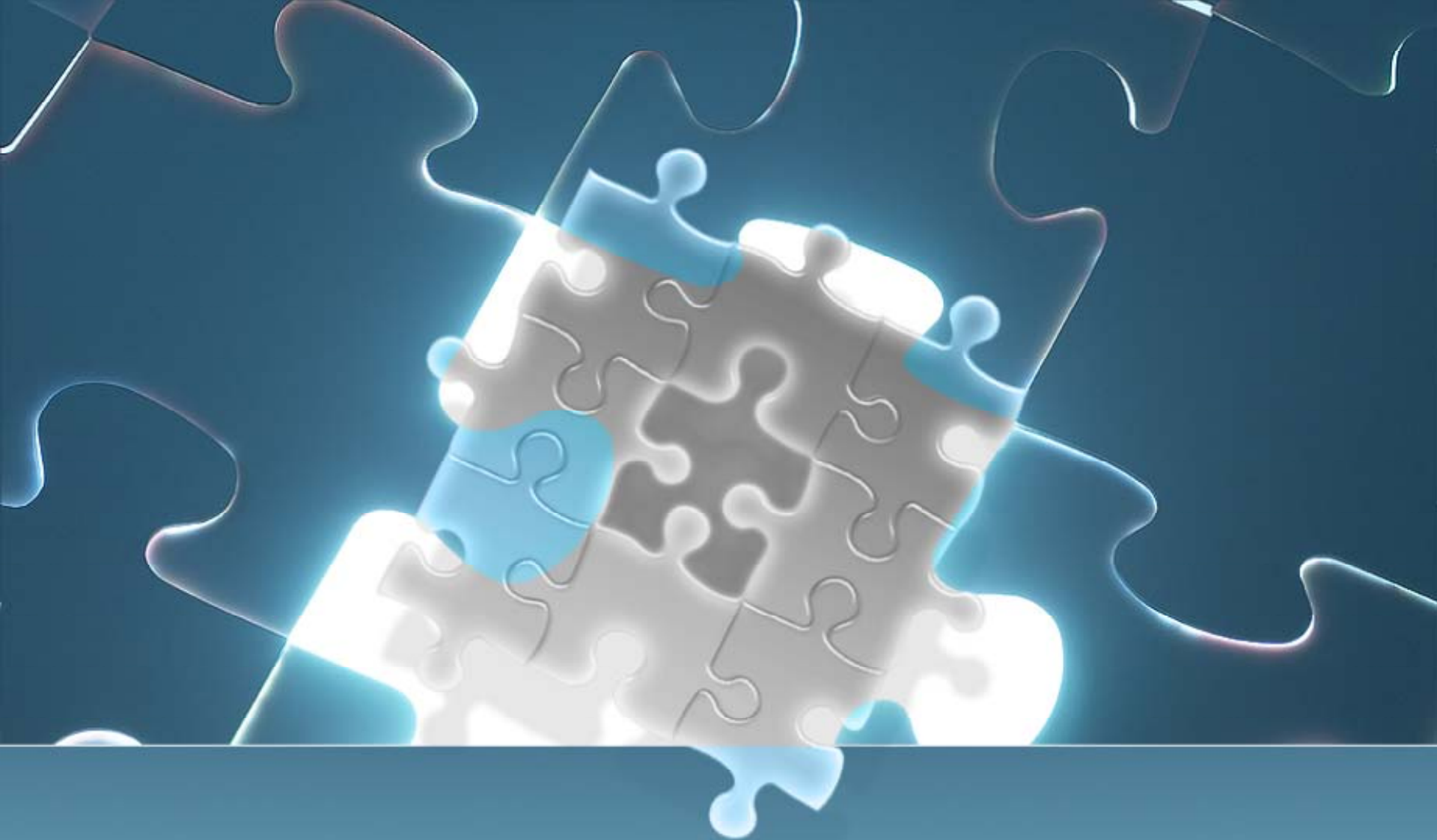
placed 89<sup>th</sup> in Google Codejam among top 100 programmers.....



# National Programming....

BUET creates the leading programmers of the nation.  
BUET programmers excel in any nationwide contest....  
Here is a short summary :

<b>Contest</b>	<b>Year</b>	<b>Champion</b>	<b>BUET Positions</b>
EWUIPC	2006	BUET	1, 2, 5, 8
AIPC	2005	BUET	1, 3, 5, ...
NCPC 04	2004	BUET	1, 3, ...



# Innovative Projects ...



# 3SM- Bangla SMS software



First ever Bangla SMS software by L-4,T-1 students

Later used by Pacific Telecom (Citycell)



# AKTEL Mayer Vasha



Further excellence on Bangla SMS software by  
L-4,T-1 students

Later used by **AKTEL**

# Telephone Controlled voting system



Imranul Haque & Sonia Zahid

**3rd prize in the Project Show for  
Future Engineers, World Engineers'  
Convention, 2004 held at Shanghai,  
China**

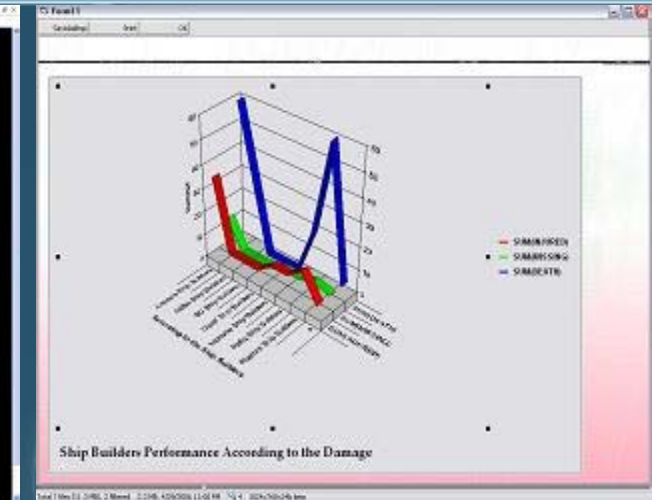


# Interfacing Projects



- Prepaid Water Meter
- Intelligent Traffic control
- SMS controlled home appliance

# Software Analysis and Design



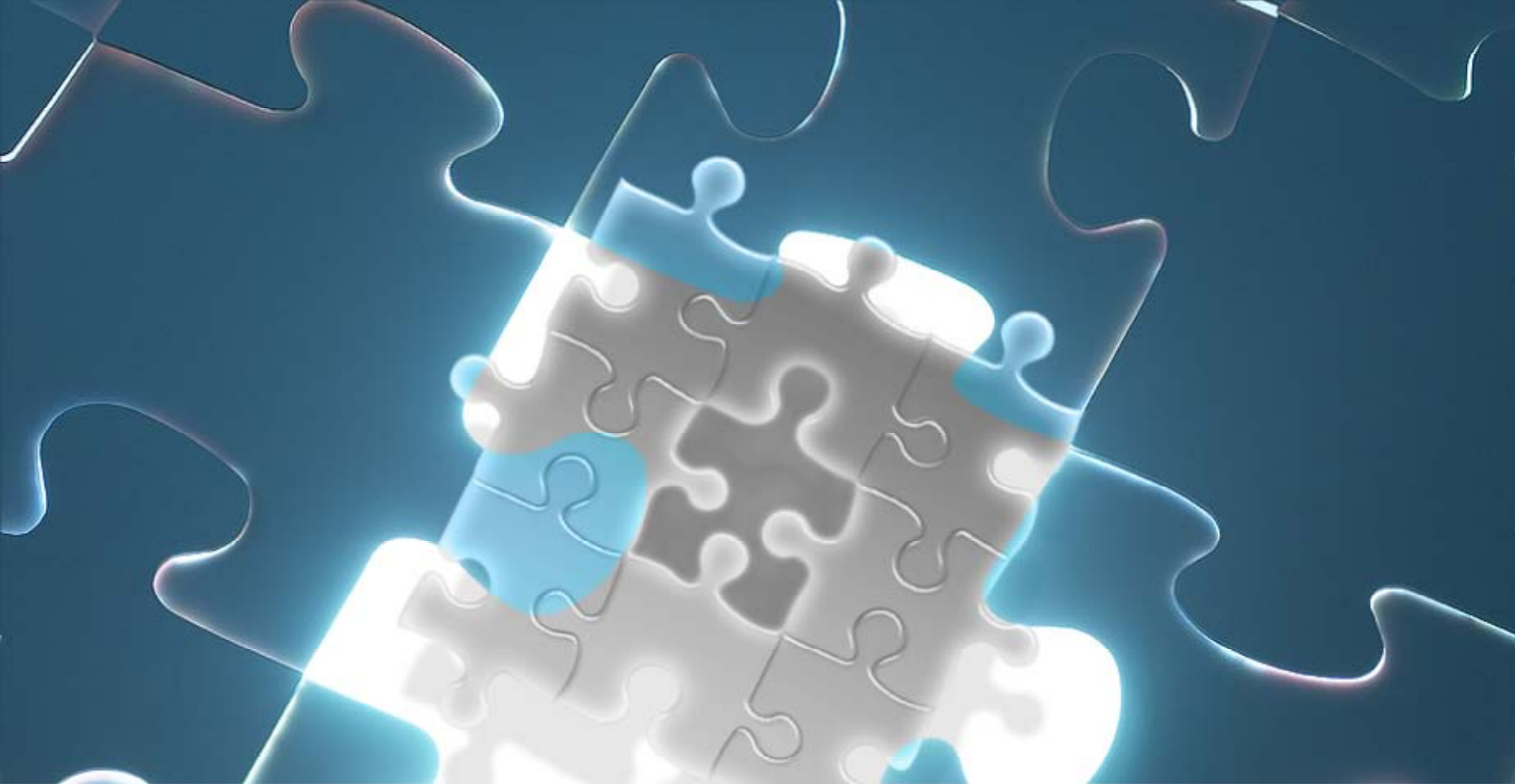
- E-billing for DESA
- Dhaka Stock Exchange
- Accident Research Centre





# Other projects

- Networking Projects
- Project Doom: The End is Near
- Space on the Web
- Bangla Localization
- Unicode Bangla Keyboard etc.



# Higher Studies



# Higher Studies

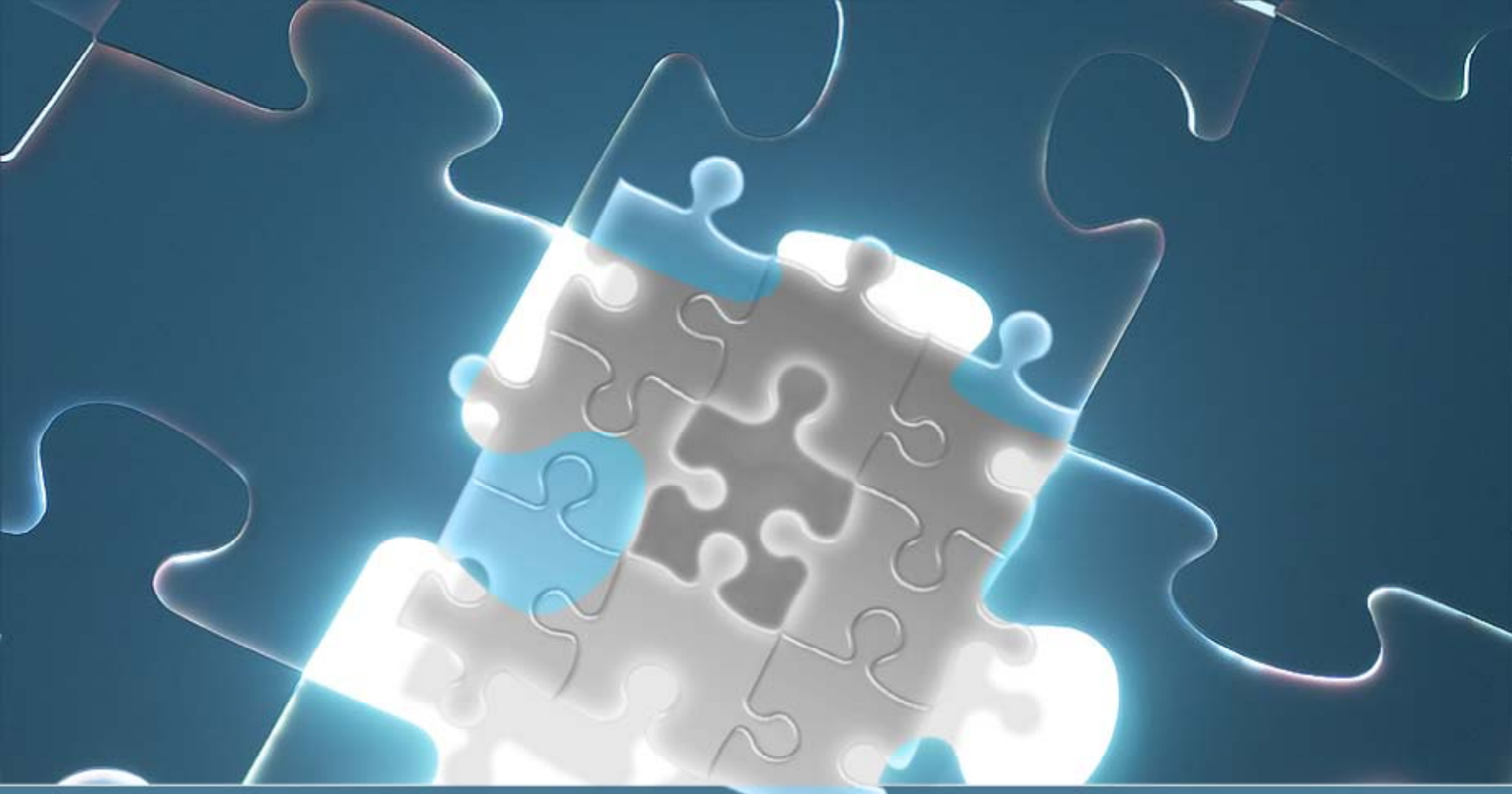
- More than **53 students** from 96, 97, 98 and **99 batches** are studying abroad now\*
- More than **9 BUET CSE graduates** are now **faculty members** in US or other foreign Universities\*



# Higher Studies

<b>University</b>	<b>Number of CSE BUET grads*</b>
<b>University of Illinois at Urbana-Champaign</b>	<b>11</b>
<b>Cornell University</b>	<b>3</b>
<b>University of Waterloo, Canada</b>	<b>9</b>
<b>Monash University, Australia</b>	<b>16</b>
<b>University of Alberta, Canada</b>	<b>4</b>
<b>Rutgers University</b>	<b>3</b>
<b>Yale University</b>	<b>1</b>

\*according to last news received.



# CSE Professionals



# CSE Grads @Microsoft

Some of our graduates got job in Microsoft even  
*before*  
completing graduation.

- Munirul Abedin Pappana
- Saifur Rahman
- Abdullah al Mahmud Satej

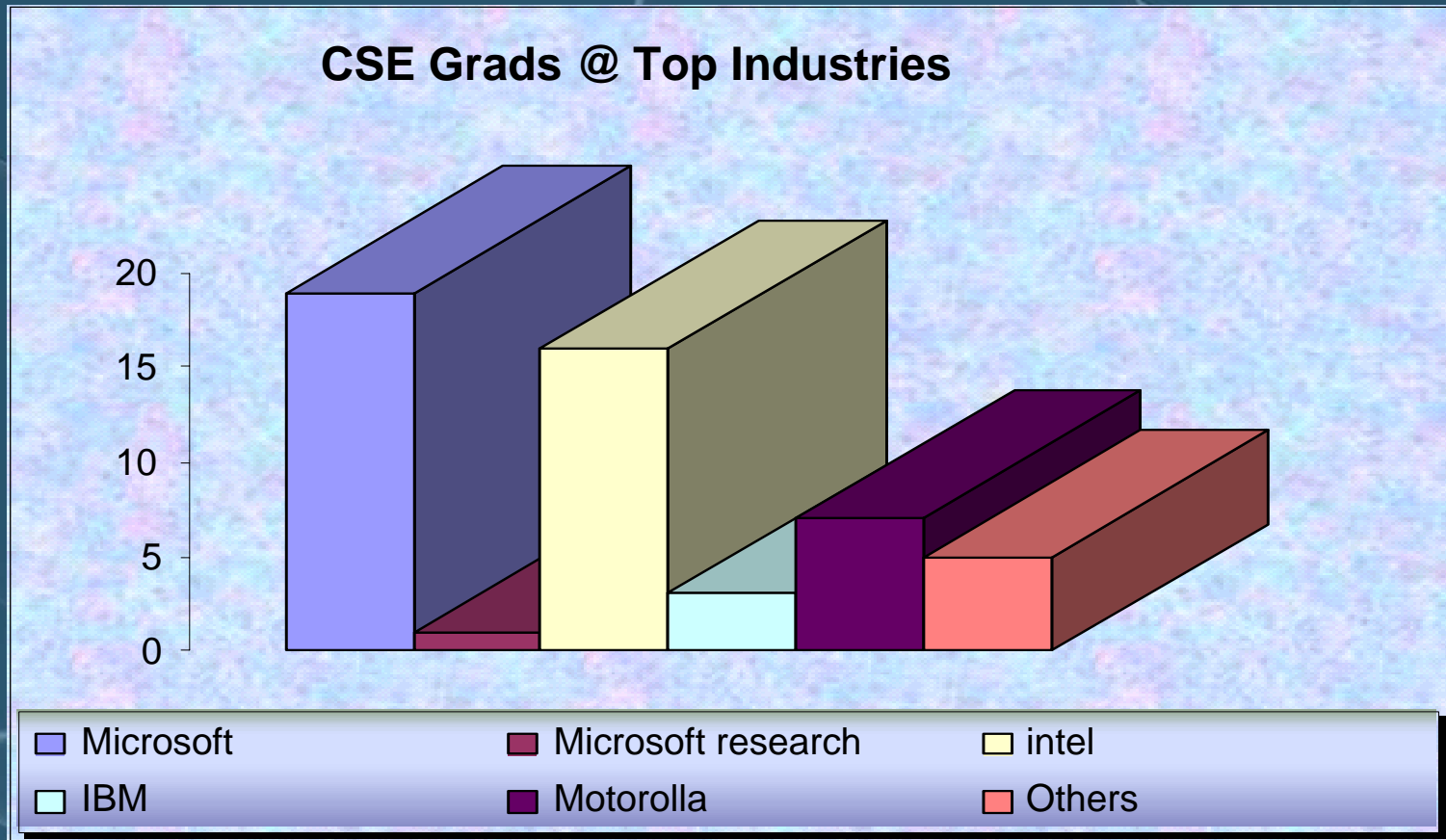


# CSE Grads @Google

- Ishtiaque Ahmed of L-4,T-2 got job in google.
- Manzurur Rahman Khan (Sidky) was offered an internship from Google when he was a student of L-2,T-2.

# Our graduates working in top Industries

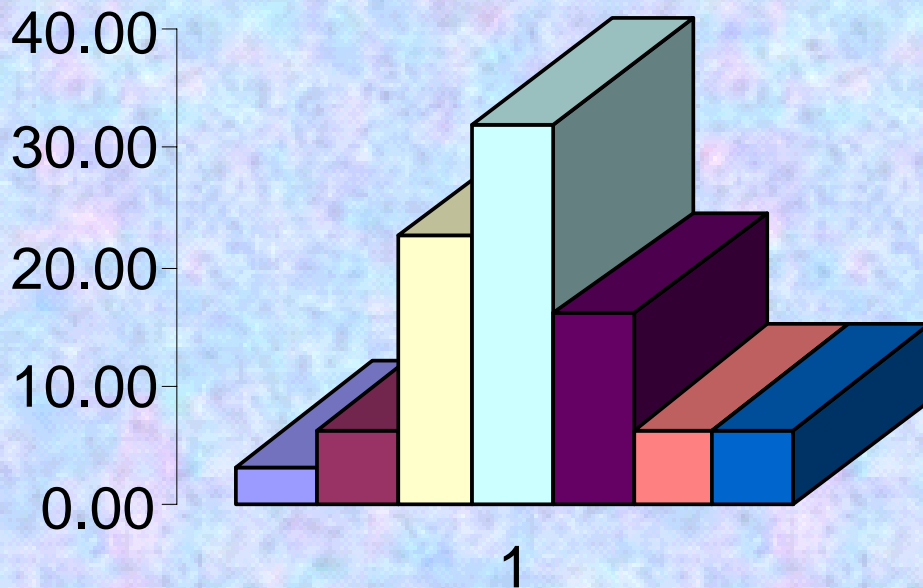
CSE graduates got jobs in all the following top international companies.





# Details information about '91 Batch

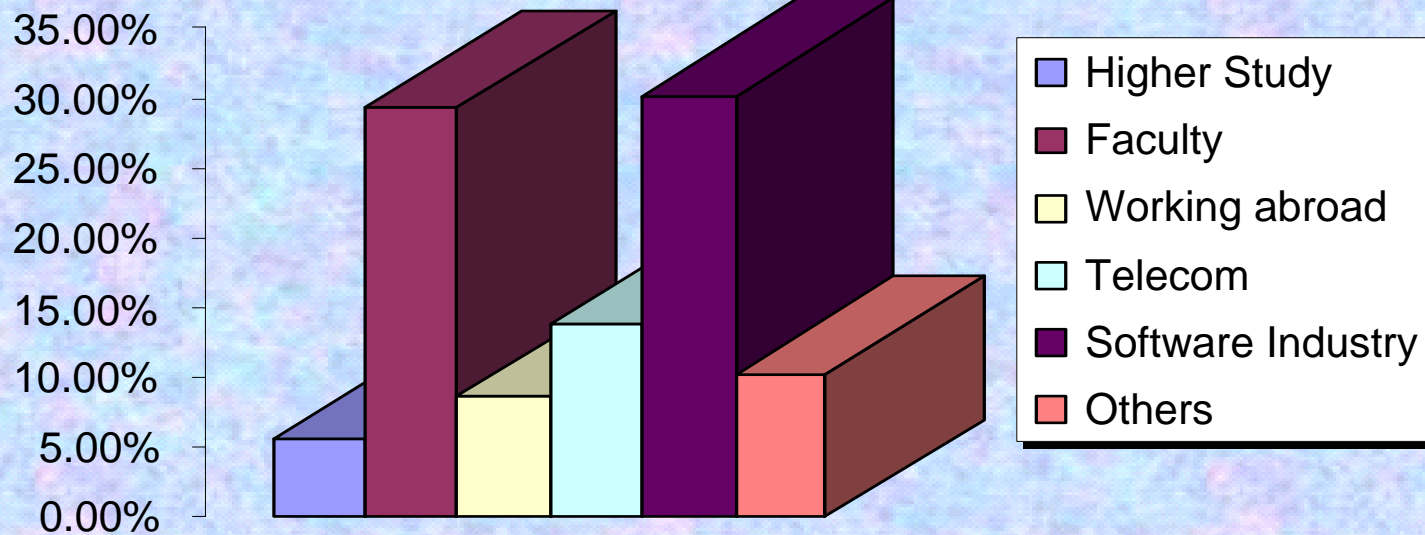
## Distribution of '91 Batch



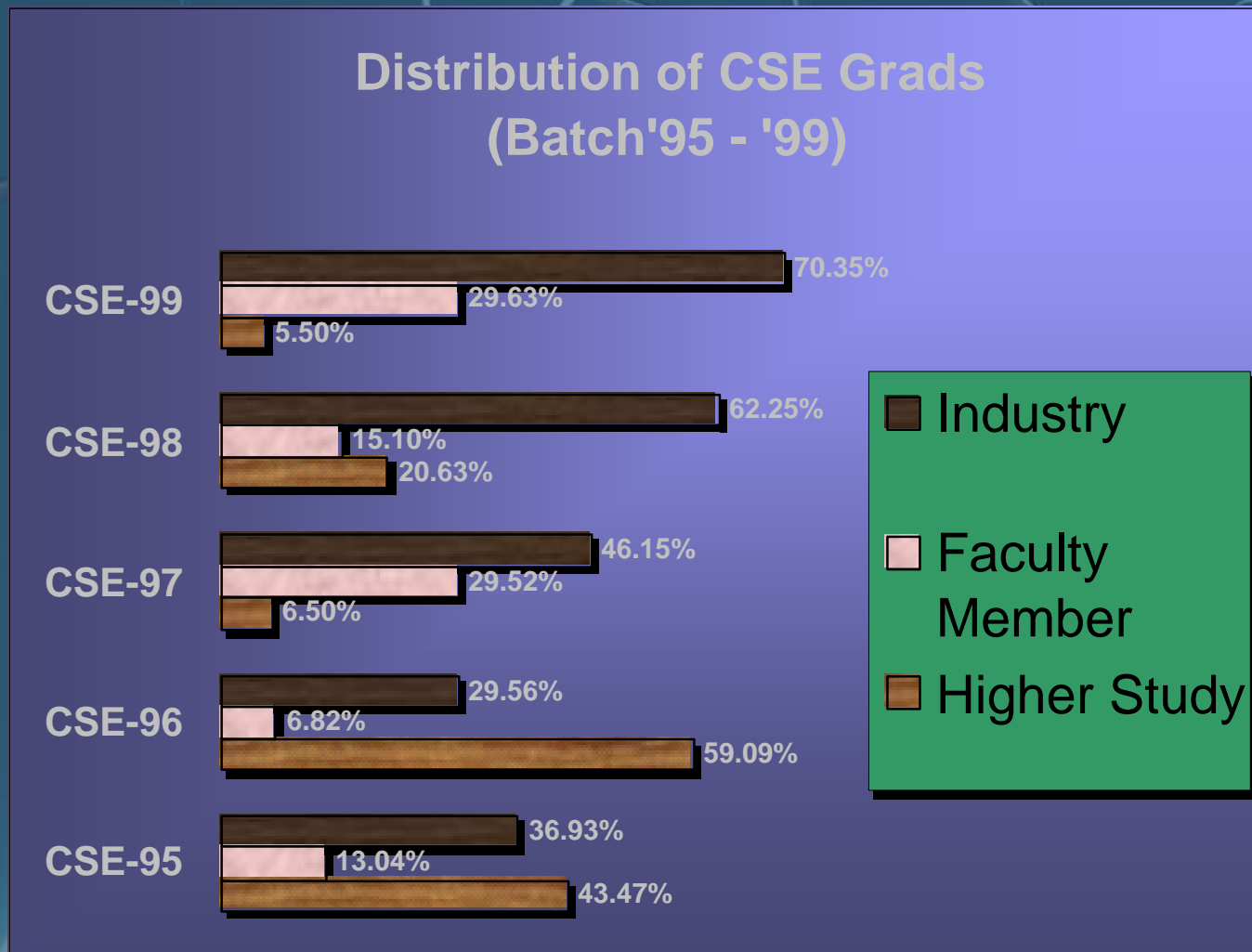
- Microsoft Research
- Faculty Member
- PhD Student
- Software Engineer@ USA
- Software Eng Others
- Msc
- Working in BD

# Details information about '97 Batch

## Distribution of Batch 97



# Recent Trend of CSE Grads..



# Outreach



**Consultation Services**  
**Training**  
**Industrial Affiliation**

The department offers several consultation services to different government and private organizations. Of them some are-

- Automated Clearing & Settlement for the Dhaka Stock Exchange
- LAN, WAN, & Backbone Design for the Bangladesh Secretariate
- BUET Library Automation



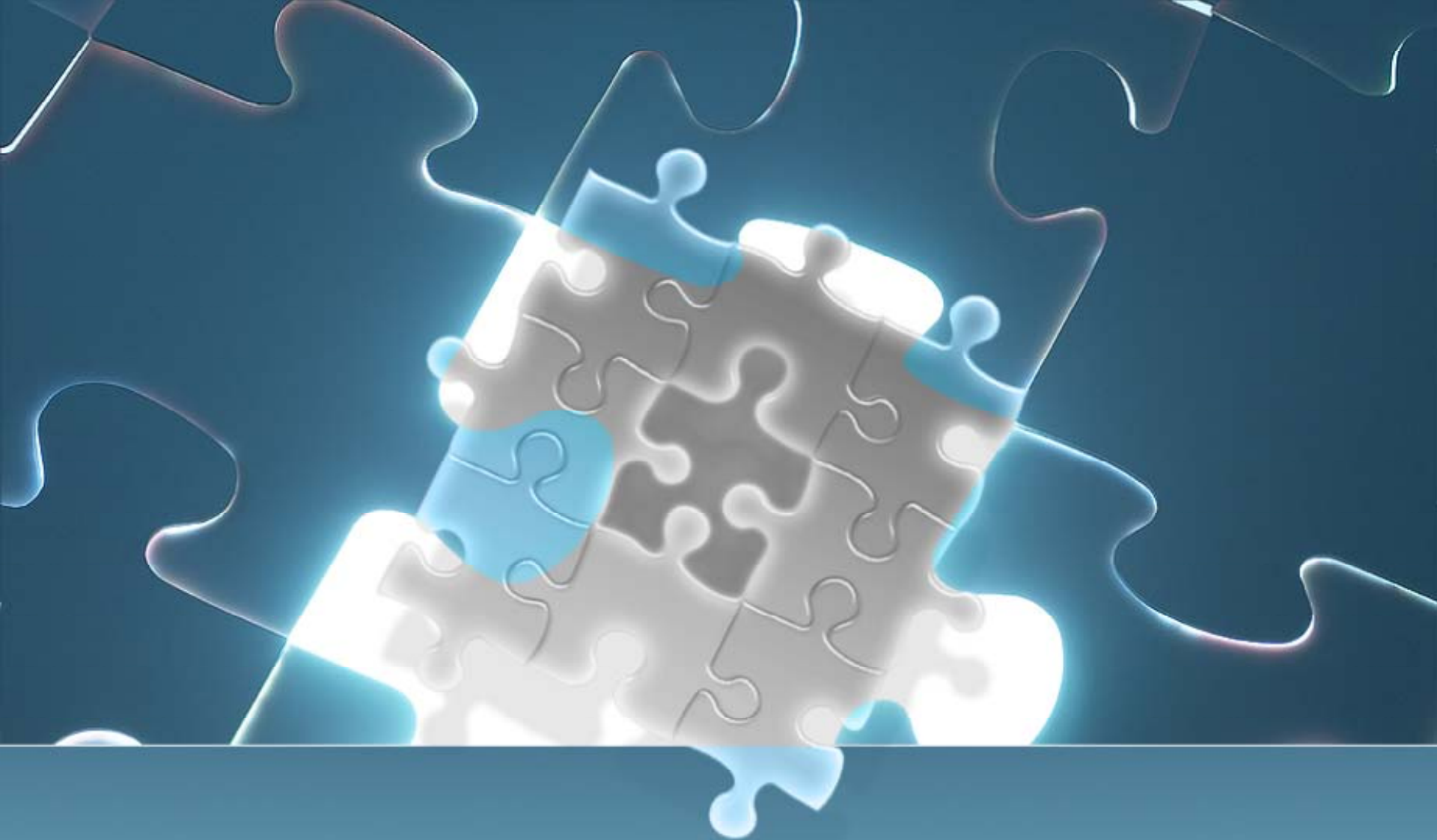
# Trainings

## Training programs and short courses

- Computer networking
- System administration using Linux
- Software development

CSE department also act as

Regional Cisco Academy in Bangladesh and provides CCNA (Cisco Certified Networking Associates) training to both instructors and students.



# Notable Alumni



# Dr. Manzur M. Murshed



**Associate Professor, Head of the Department and Director of Research at Gippsland School of Information Technology, Monash University, Australia.**

**He has published 92 journal and peer-reviewed research publications.**



# Dr. Ekram Hossain

**Associate Professor in the  
Department of Electrical and  
Computer Engineering at University  
of Manitoba Winnipeg, Canada.**



**University of Victoria Fellow**

**Recipient of British Columbia  
Advanced Systems Institute (ASI)  
graduate student award.**

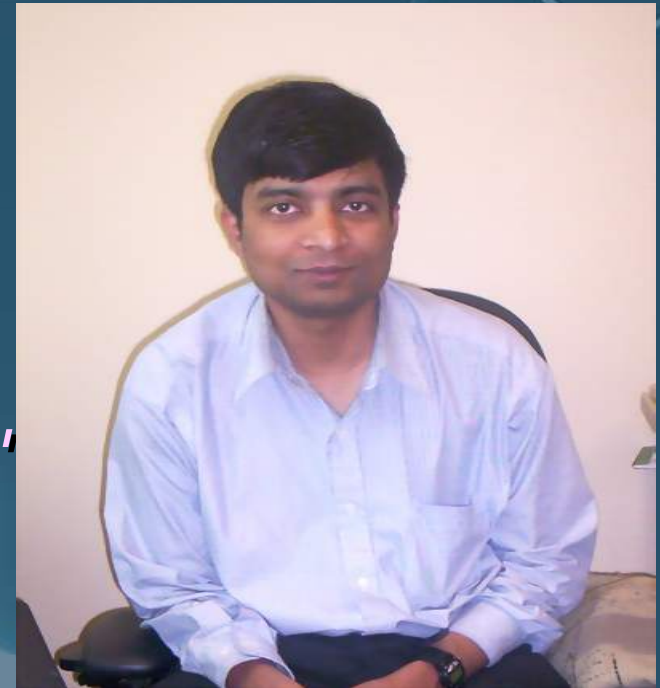




# Dr. Latifur Rahman Khan

**Associate Professor in the Computer Science department at the University of Texas at Dallas.**

**Supported by grants from the National Science Foundation (NSF), Nokia Research Center, Alcatel, and the SUN academic equipment grant program.**





# Dr. Suman Kumar Nath

**PhD at the School of Computer Science, Carnegie Mellon University.**

**Presently at Microsoft Research.**

**Best Paper Award for**

**'A Distributed Filtering Architecture for Multimedia Sensors'**

**in the First Workshop on Broadband Advanced Sensor Networks (BaseNets), 2004.**





# ***Thank You***

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