A

Webinar on

"MATLAB: A BRIDGING TOOL FOR SCIENCE AND ENGINEERING MODELS"

Organiged by

Department of Mathematics ,

Pattamundai College, Pattamundai

on

18ᵗʰ September 2020.

Session 2020-21

REPORT

A webinar was organised by Department of Mathematics, Pattamundai College, Pattamundai on 18th September 2020 on the topic **"MATLAB: A BRIDGING TOOL FOR SCIENCE AND ENGINEERING MODELS"** . Dr. Basanta Kumar Swain, Assistant Professor of Computer Science & Engineering, Government College of Engineering, Kalahandi, Bhawanipatna who graced the webinar with his analytical thinking. We were able to get the beautiful glimpses of the students of our Department in this webinar. Sri Arabinda Pandab, Head of the Department gave a key note address of the topic. Principal Prof Adhikari Laxminarayan Dash welcomed the guest and participants of different colleges of our state through web. The webinar was ended with a vote of thanks by Dr Nirmal Kumar Sahoo, another faculty member.

Arabinda Pandab
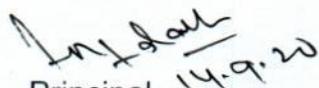HOD& Convenor

Ref No. : 863

Date 14/9/20

To

Dr. Basanta Kumar Swain,
Assistant Professor (Computer Science & Engineering),
Government College of Engineering,
Kalahandi, Bhawanipatna, Odisha.

Sub: Invitation to act as the **Resource Person** in the extramural webinar of Department of Mathematics.

Sir,

I am pleased to invite you to kindly act as the resource person in the extramural webinar on "**MATLAB: A Bridging tool for Science & Engineering Models**" organised by Dept. of Mathematics on 18th September 2020 at 10:30 a.m.

Your kind consent in this regard is highly solicited.

Principal 14.9.20
Pattamundai College.

Principal
Pattamundai College

M Gmail

Principal Pattamundai College <pattamundaicollege@gmail.com>

Invitation to act as resource person
2 messages

Principal Pattamundai College <pattamundaicollege@gmail.com>   Mon, Sep 14, 2020 at 12:31 PM
To: bkswain@gcekbpatna.ac.in

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📄 **Math.pdf**
148K

BASANTA KUMAR SWAIN <bkswain@gcekbpatna.ac.in>   Mon, Sep 14, 2020 at 12:35 PM
To: Principal Pattamundai College <pattamundaicollege@gmail.com>

Dear Sir,

I am ready to act as Resource Person for Webinar organized by Department of Mathematics on 18th
September 2020.

Thanks & Regards

On Mon, Sep 14, 2020, 12:30 PM Principal Pattamundai College <pattamundaicollege@gmail.com> wrote:

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14.9.20

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- Master of Engineering in Computer Science and Engineering, Utkal University.
- Master of Business Administration with Specialization in Information Management, Utkal University.
- Ph.D. in Computer Science, Utkal University.

Employment Record

- Worked as Research Fellow at Utkal University from 7th Aug 2008 to 1st Feb 2009.
- Worked as Contract Lecturer at Utkal University in P.G.Dept of Comp. Sc. & Application from 2nd Feb2009 to 30th Sept 2010.
- Currently Working as Assistant Professor (Senior Grade) at Government College of Engineering, Kalahandi, Bhawanipata since 2nd October 2010.

Research Interest.

- Speech Processing Technology especially Man-Machine Communication in Odia Spoken Language.
- Artificial Intelligence
- Machine Learning
- Image Processing

Publication.

A number of publications to his credit in International Journals, Book Chapters and Conferences of Prestigious Publishers like Springer, Elsevier, Bentham Science, IEEE etc.

International Journal-13

International Conferences-10

Book Chapters-5

RESEARCH PROJECT

Received a Project from **Department Science and Technology, Govt. of India** as Co-Principal Investigator on "**Robotics and Artificial Intelligence**" of amount **Rs. 1.2 Crore**.

DEPARTMENT OF MATHEMATICS
PATTAMUNDAI COLLEGE , PATTAMUNDAI

Organises

A Webinar on

MATLAB: A BRIDGING TOOL FOR SCIENCE AND ENGINEERING MODELS

Date: 18.09.2020 , Time:10: 30 A.M

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Kalahandi, Bhawanipatna, Odisha

Prof. A.L.N Dash
Principal
Pattamundai College
Pattamundai

Mr. A. Pandab
H.O.D and Convenor

Dr. N.K. Sahoo
Co-Convenor

Webinar on

MATLAB: A BRIDGING TOOL FOR SCIENCE AND ENGINEERING MODELS

Organized by Department of Mathematics, Pattamundai College, Pattamundai on 18th September 2020.

Submitted By:

Dr. Basanta Kumar Swain,

Assistant Professor of Computer Science & Engineering,

Government College of Engineering, Kalahandi, Bhawanipatna. Odisha, 766002.

1. EVOLUTION OF MATLAB

• Developed primarily by Cleve Moler in the 1970's .

• Derived from FORTRAN subroutines LINPACK and EISPACK. linear and eigenvalue systems.

• Developed primarily as an interactive system to access LINPACK and EISPACK.

• Gained its popularity through word of mouth, because it was not officially distributed.

• Rewritten in C in the 1980's with more functionality, which include plotting routines.

• The MathWorks Inc. was created (1984) to market and continue development of MATLAB.

2. Main characteristics of MATLAB

• MATLAB may behave as a calculator or as a programming language

• MATLAB combine nicely calculation and graphic plotting.

• MATLAB is relatively easy to learn.

• MATLAB is interpreted (not compiled), errors are easy to fix.
• MATLAB is optimized to be relatively fast when performing matrix operations.
• MATLAB is not a general purpose programming language such as C, C++, or FORTRAN
• MATLAB is designed for scientific computing, and is not well suitable for other applications• '
• MATLAB is an interpreted language, slower than a compiled language such as C++
• MATLAB commands are specific for MATLAB usage.

- Most of them do not have a direct equivalent with other programming language commands

3.1 Exploration of MATLAB through Online access

Step 1→https://in.mathworks.com/products/matlab-online/limitations.html

Step2 → Verify through registered mail

step3 → login

https://in.mathworks.com/products/matlab-online.html

3.2 Exploration of MATLAB in Smart Phone

Step 1→ go to **G-play store/ App Store** of your Phone

Step 2→**Download and Install**

Step 3→Connect to the MathWorks Cloud and access MATLAB

wherever you have Internet connectivity.

https://www.gnu.org/software/octave/about

Download and Install freely redistributable software

4.1 MATLAB as a calculator

- Examples:
- 2 * 200+ 5 – 100
- log2(10)
- log(5)
- Sqrt(625)
- pi + 2

4.2 Getting help

>> help Command

Examples:

>>help sqrt

>> help pi

4.3 Controlling the appearance of FLoating point number

- MATLAB by default displays only 4 decimals in the result of the calculations,
- example
- 100.1234567 => 100.1235
- If we want to see all 15 digits, we use the command format long

- >> format long

4.4 Entering multiple statements per line

- Use commas (,)

allow multiple statements per line without suppressing output.

- semicolons (;)
- allow multiple statements per line **with** suppressing output.

4.5 Predefined Functions

Table 1. Elementary functions.

cos(x)	Cosine	abs(x)	Absolute value
sin(x)	Sine	sign(x)	Signum function
tan(x)	Tangent	max(x)	Maximum value
acos(x)	Arc cosine	min(x)	Minimum value
asin(x)	Arc sine	ceil(x)	Round towards $+\infty$
atan(x)	Arc tangent	floor(x)	Round towards $-\infty$
exp(x)	Exponential	round(x)	Round to nearest integer
sqrt(x)	Square root	rem(x)	Remainder after division
log(x)	Natural logarithm	angle(x)	Phase angle
log10(x)	Common logarithm	conj(x)	Complex conjugate

4.6 Vector creation

- Row vector
- r = [10, 20,30,40]
- Column vector

    C =[100; 200; 300; 400]

Accessing elements from Matrix

M = [10, 20, 30; 400, 500,700];

Output

     10   20   30

     400   500   700

M(I , j)➔M(1,2)

>> 20

4.7 Elementary matrices

- eye(m,n)----> returns an m by n with 1 on the main diagonal
- eye(n) ---➔ return an n by n square matrix
- zeros(m,n)-➔ returns an m by n matrix of zeros

- ones(m,n) ----→ returns an m by n matrix of ones

- diag(A)---→ Extracts the diagonal of matrix A

- rand(m,n)---→ Returns an m by n matrix of random numbers

- size(A)----→ returns the dimension of matrix

4.8   Matrix operations

- A + B

- A – B

- A * B and a.*B

4.9   Plotting in Matalab

Example

x = 0:0.1:2*pi;

y=sin(x);

xlabel('X-Axis');

ylabel('Y-Axis');

plot(x,y)

4.10   Solving linear equations

$$\begin{cases} x + 2y + 3z & = 1 \\ 4x + 5y + 6z & = 1 \\ 7x + 8y & = 1 \end{cases}$$

The coefficient matrix A is

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \quad \text{and the vector} \quad b = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$$

With matrix notation, a system of simultaneous linear equations is written

$$Ax = b$$

x = inv(A)*b

4.11   Matlab Script

- **Scripts** – script files are program files with **.m extension**.

- In these files, you write series of commands, which you want to execute together.

- Scripts do not accept inputs and do not return any outputs. They operate on data in the workspace.

- function f = factorial(n)

- % FACTORIAL(N) returns the factorial of N.

- % Compute a factorial value.

- f = prod(1:n);

- disp('Factorial is ');

- disp(f);

5. **Conclusion**

- Matlab is too expensive for most individuals to consider purchasing.

- A full copy of MATLAB is five to ten times more costly than a conventional compiler.

- Most of the features are available in free of cost from the competitors such as GNU OCTAVE.

- Ocatve performs the numerical experiments using a language that is mostly compatible with Matlab..

PATTAMUNDAI COLLEGE, PATTAMUNDAI
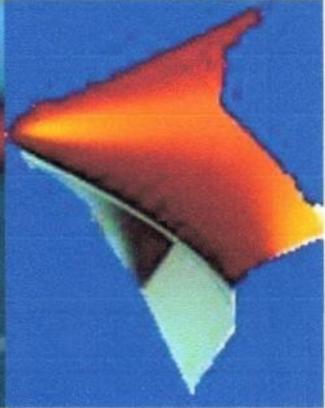
CERTIFICATE OF PARTICIPATION

xxxx

From

YYYY

has participated a webinar on "Matlab: A Bridging Tool for Science and Engineering Models" organized by Department of Science and Mathematics on 18ᵀʰ September 2020.

Math/ W1/2020/FNYXCY-CE000100

(Prof. A.L.N.Dash)
Principal

(Dr. B.K.Swain)
Resource Person

(Mr. A. Pandab)
Convener

CELEBRATING 50 GOLDEN JUBILEE ANNIVERSARY 1970 2020 PATTAMUNDAI COLLEGE

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ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ୱେବିନାର

ପଞ୍ଚାମୁଣ୍ଡାଇ, ୨୯।୯ (ନି.ପ୍ର): ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ମ୍ୟାଟଲାବ ଏ ବ୍ରିଜିଂ ଟୁଲ ଫର ସାଇନ୍ସ ଆଣ୍ଡ ଇଞ୍ଜିନିୟରିଙ୍ଗ ମଡେଲ ଶୀର୍ଷକ ୱେବିନାର କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାସଙ୍କ ପୌରୋହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ଏଥିରେ ଭବାନୀପାଟଣା ସରକାରୀ ଇଞ୍ଜିନିୟରିଙ୍ଗ କଲେଜ କମ୍ପ୍ୟୁଟର ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ବସନ୍ତକୁମାର ସ୍ୱାଇଁ ମ୍ୟାଟଲାବର ପ୍ରୟୋଗ ଓ ସାମ୍ପ୍ରତିକ ସମୟରେ ଅନିବାର୍ଯ୍ୟ ସପୂର୍ଣ୍ଣ ବୋଲି ମତପ୍ରକାଶ କରିଥିଲେ । ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ମୁଖ୍ୟ ଅଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତ ଭାଷଣ ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ । ଅଧ୍ୟାପକ ଡଃ. ନିର୍ମଳକୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ ।

ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ୱେବିନାର

ପଞ୍ଚାମୁଣ୍ଡାଇ,୨୯/୯(ଭିମିସ): ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ଏକ ୱେବିନାର ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାଶଙ୍କ ସଭାପତିତ୍ୱରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ମୁଖ୍ୟ ଆଲୋଚକ ଭାବେ ଭବାନୀପାଟଣା ସରକାରୀ ଇଞ୍ଜିନିୟରିଂ କଲେଜର ପ୍ରଫେସର ଡ. ବସନ୍ତ କୁମାର ସ୍ୱାଇଁ ଅଂଶଗ୍ରହଣ କରି ମ୍ୟାବ୍ଲାବ୍‌ର ପ୍ରୟୋଗ ଓ ଏହାର ଆବଶ୍ୟକ ଉପରେ ମତବ୍ୟକ୍ତ କରିଥିଲେ। ବିଭାଗୀୟ ମୁଖ୍ୟ ଅଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ କାର୍ଯ୍ୟକ୍ରମ ପରିଚାଳନା କରିବା ସହ ସ୍ୱାଗତ ଭାଷଣ ପ୍ରଦାନ କରିଥିଲେ। ଅଧ୍ୟାପକ ନିର୍ମଲ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ। ବିଭିନ୍ନ କଲେଜର ବହୁ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା କାର୍ଯ୍ୟକ୍ରମରେ ଅଂଶଗ୍ରହଣ କରିଥିଲେ।

ଗଣିତ ବିଭାଗରେ ୱେବିନାର

ପଞ୍ଚମୁଖୀ,୧୧୦(ଆପ୍): ପଞ୍ଚମୁଖୀ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ମ୍ୟାଟଲ୍ୟାବ ଏ ଡୁଲ୍‌ ଫର ସାଇଣ୍ଟ ଆଣ୍ଡ ଇଞ୍ଜିନିୟରିଂ ମଡେଲ ଶୀର୍ଷକ ୱେବିନାର କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାଶଙ୍କ ପୌରହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ଏଥିରେ ଭବାନୀପାଟଣା ସରକାରୀ ଇଞ୍ଜିନିୟରିଂ କଲେଜ କମ୍ପ୍ୟୁଟର ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ବସନ୍ତ କୁମାର ସ୍ୱାଇଁ ଯୋଗଦେଇ ମ୍ୟାଟଲ୍ୟାବର ପ୍ରୟୋଗ ଓ ସମ୍ପ୍ରତିକ ସମୟରେ ଅନିବାର୍ଯ୍ୟ ସପ୍ୟୁଟର ବୋଲି ମତପ୍ରକାଶ କରିଥିଲେ। ପଞ୍ଚମୁଖୀ କଲେଜ ଗଣିତ ବିଭାଗ ମୁଖ୍ୟ ଅଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତ ଭାଷଣ ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଅଧ୍ୟାପକ ଡ. ନିର୍ମଳ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ।