

CARBOCON GMBH • Mohorner Straße 13 • 01159 Dresden

Anvar Mohamed Aslam Sha

CARBOCON GMBH

Mohorner Straße 13 • D01159 Dresden

Tel.: +49 (0) 351 48205 500 • Fax.: +49 (0) 351 48205 501

info@carbocon-gmbh.de • www.carbocon.de

Dresden, 02 January 2024

Reference Letter

Mr. Anvar Mohamed Aslam Sha completed his master's thesis on the topic "Machine Learning for Determining Characteristic Values Based on Material-Specific Tests" in our company as part of his civil engineering studies at the Technical University of Dresden in the period from April to November 2023. He was supervised by Prof. Dr.-Ing. Alexander Schumann, Chief Executive Officer at CARBOCON GMBH and Maximilian May, Team Leader at CARBOCON GMBH.

The thesis addressed challenges in determining characteristic values for tensile strength tests, particularly for smaller sample sizes such as 10. It highlighted the limitations of traditional methods, where assumptions of normal distribution or the use of t-distribution for smaller sample sizes, as recommended in Eurocode, may lead to inaccurate estimations.

CARBOCON is the leading service provider in the field of carbon reinforced concrete. Our services include project management, planning and consulting for construction projects, the transfer of innovations to industry, the development and approval of innovative and technical solutions with carbon reinforced concrete as well as patent exploitation.

As part of his research work leading to the MSc degree, Mr. Anvar Mohamed Aslam Sha has conducted the following tasks and findings:

- Discussion of the sources of variability in material testing, emphasizing the unique challenges posed by smaller sample sizes.
- Exploration of the Eurocode's standard evaluation procedure for characteristic values, acknowledging its recommendation of t-distribution for smaller sample sizes and examinations with regard to accuracy.
- Proposal of an approach for outlier detection using z-score, IQR, and Winsorizing, conduction of hypothesis tests.
- Usage of statistical and machine learning models to establish a relationship between sample size and characteristic values for a series of tensile strength tests. A clear correlation was established and used for the prediction of more accurate characteristic values for larger sample sizes.

Geschäftsleitung:

Dipl.-Ing. Sebastian May

Prof. Dr.-Ing. Alexander Schumann

Dipl.-Betriebswirtin/MBA Ines Kästner

Amtsgericht Dresden HRB 34023

Ust-ID Nr.: DE298205102

Bankverbindung:

Commerzbank AG

IBAN: DE19 8504 0000 0801 7394 00

BIC/SWIFT: COBADEFFXXX



Top-Innovator
2021



- Employment of Generative Adversarial Networks (GANs) to generate new samples for tensile strength tests and evaluation of the accuracy of the generated samples using propensity score analysis.

Mr. Anvar Mohamed Aslam Sha has an extensive specialist knowledge from his studies, which he used to successfully complete the research aims of his thesis. He impressed us with his technical understanding and his ability to understand complex relationships. During his thesis he always showed a high level of initiative and a willingness to acquire and apply new knowledge. When carrying out his tasks, he always proceeded in a structured and well-planned manner.

It was a pleasure to supervise and guide Mr. Anvar Mohamed Aslam Sha during his thesis work and we are convinced that his findings will lead to interesting continued research projects and developments.

We wish Mr. Anvar Mohamed Aslam Sha all the best for his future professional development and career.

Prof. Dr.-Ing. Alexander Schumann
Technical Managing Director

Ines Kästner
Commercial Managing Director

Technische Universität Dresden, 01062 Dresden

To whom it may concern

Prof. Dr.-Ing.-habil.

Uwe Reuter

Head

contact: Uwe Reuter

telephone: 0351 463-35728

email: uwe.reuter@tu-dresden.de

date: 2022-12-09

letter of recommendation for Mr. Anvar Mohamed Aslam Sha, B.Sc.

This letter is to confirm that Mr. Anvar Mohamed Aslam Sha is known to me since October 2020 as a student of the M.Sc. programme "ACCESS - Advanced Computational and Civil Engineering Structural Studies" offered by the Faculty of Civil Engineering.

Mr. Aslam Sha took part in the module "Numerical Methods" held by me. Within the module "Numerical Methods" Mr. Aslam Sha acquired knowledge of the application of basic as well as advanced numerical algorithms for the solution of engineering problems as well as of the implementation of these algorithms in complex software solutions.

Under my supervision Mr. Aslam Sha wrote his project work on the topic "Analysis of an autoencoder-based approach for determining the configuration of embedded obstacles" including an oral presentation.

Mr. Aslam Sha's behaviour towards his lecturers and fellow students was always exemplary, friendly and beyond reproach.

Yours sincerely,



Prof. Dr.-Ing. habil. Uwe Reuter

Briefadresse
TU Dresden
01062 Dresden

Paketadresse
TU Dresden
Helmholtzstraße 10
01069 Dresden

Internet www.tu-dresden.de

Besuchsadresse
August-Bebel-Str. 30, Haus 116
01219 Dresden, Raum 02-011

barrierefreier Zugang
über Foyer im Erdgeschoss
gekennzeichnete Parkflächen
im Innenhof

Kein Zugang für elektronisch signierte sowie verschlüsselte elektronische Dokumente.

Steuernummer
(Inland)
203/149/02549

Umsatzsteuer-Id-Nr.
(Ausland)
DE 188 369 991

Bankverbindung
Commerzbank AG,
Filiale Dresden

IBAN
DE52 8504 0000 0800 4004 00
BIC
COBADEFF850

Die TU Dresden ist
Partnerin im Netzwerk
DRESDEN-concept

DRESDEN
concept 



Dineshchandra R. Agrawal Infracon Pvt. Ltd.

Infrastructure Builder

401, The Grand Mall, S.M. Road, Ambawadi, AHMEDABAD - 380015, Gujarat, INDIA
Phone : 91-79-30008789, 26309789, Fax : 91-79-40022556
E-mail : drainfra89@gmail.com / draiplcorp@gmail.com Website : www.draipl.com

Date:- June 06, 2020

TO WHOM IT MAY CONCERN

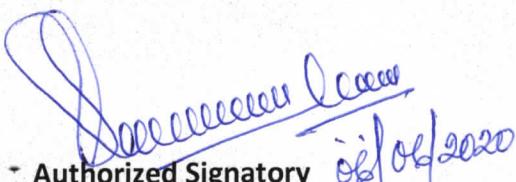
This is to certify that **Mr. Anvar Mohamed Aslam Sha, B.tech (Civil)** son of Mr. Ghous Mohamed Anvar has worked in our company as a **Site Engineer from 20.05.2019 to 31.05.2020 (40 working hours per week)**. He was deployed in the construction site to ensure all site personnel uses quality workmanship in accordance with plans and client needs.

While working with the company, he took interest to know project control activities which includes tracking cost, developing schedules and making spreadsheets. He is found sincere, dynamic and energetic in his duties. His accommodation and fooding was provided by the company during the aforementioned period.

His overall performance as a Site Engineer has been found to be satisfactory.

We wish him all success.

For, Dineshchandra R Agrawal Infracon Pvt. Ltd.



06/06/2020

- Authorized Signatory
General Manager
M-9163397747

Regional Office :

Dineshchandra R. Agrawal Infracon Pvt. Ltd., 2nd Floor, Premises no. 01-0676, Office No. - 205-206.
Eco Suite Business Tower, Plot No. IID-22, Block No. IID, Street No. 676-775, Newtown,
Kolkata- 700157, West Bengal.

Project Office :

Vill- Kourang, KM Stone : 110+815, NH-32, P.O - Puara, Kantadih, PS - Aisha, Dist - Purulia
Pin - 723153, West Bengal

Faculty of Civil Engineering

After having successfully passed the Master's examination of the Master's course in Advanced Computational and Civil Engineering Structural Studies - ACCESS

Mr Anvar Mohamed Aslam Sha

born in Cuddalore, Tamil Nadu, India, on 1 June 1997

is awarded the academic degree

Master of Science
(M.Sc.)

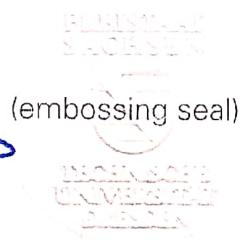
Dresden, 1 December 2023

Rector



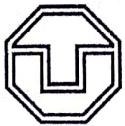
Prof. Dr.
Ursula Staudinger

Chairman
of Examination Board





Prof. Dr.-Ing. habil.
Michael Kaliske



CERTIFICATE OF THE MASTER'S EXAMINATION

Mr Anvar Mohamed Aslam Sha

born in Cuddalore, Tamil Nadu, India, on 1 June 1997

has passed the Master's examination of the Master's course

**Advanced Computational and Civil Engineering Structural Studies -
ACCESS**

in accordance with the Examination Regulations with an
overall mark of: satisfactory (2.7)

and has proven the following achievements:

Master's Thesis titled:

Machine learning for determining characteristic values based on material-specific tests

Supervisor: Prof. Dr.-Ing. habil. Uwe Reuter

Grade: satisfactory (2.7)

Credits: 30

Module examinations

CR Grade

Compulsory Field

Building Materials	8	2.0
Continuum Mechanics, Tensor Calculus	8	3.0
Energy Methods, FEM	8	3.3
Numerical Methods	4	3.7
Mentoring Programme on Student Competence	2	p
Mentoring Programme on Methods Competence	2	p
Application of Computational Methods in Engineering	6	3.0
Application-Oriented Research Project	24	3.0

Elective Compulsory Field

Structural Use of Glass	4	3.7
Computational Building Physics	4	2.0
Multiscale Mechanics	4	2.3
Computational Dynamics	4	2.0
Modelling and Simulation in Pavement Engineering	4	3.0
Cable-Stayed Bridges	4	1.7
BIM-Based Virtual Engineering Lab	4	1.7

For the assessment of the individual exam achievements in the module examinations, please see the Annex to the Certificate (only part of the German certificate).

Dresden, 1 December 2023

Dean

Prof. Dr.-Ing.
Jürgen Stamm

Chairman
of Examination Board

Prof. Dr.-Ing. habil.
Michael Kaliske



SL. No.: B 001062

B.S. Abdur Rahman

Reg. No. :150011601139



Crescent
Institute of Science & Technology

Deemed to be University u/s 3 of the UGC Act, 1956
(Formerly B.S. Abdur Rahman Institute of Science & Technology)



*By the authority of the Board of Management
and upon the recommendation of
School of Infrastructure*

*B.S. Abdur Rahman Crescent Institute of Science & Technology
confers upon*

Mohamed Aslam Sha. A

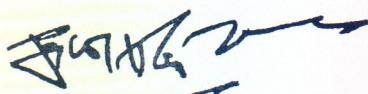
*the degree of Bachelor of Technology in
Civil Engineering
with all its rights, privileges and honours.*

*He has been placed in First Class with Distinction
in the examinations held in May 2019.*

*Given under the seal of the Institute,
this Fifth day of October, Two Thousand and Nineteen.*



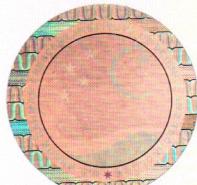

Registrar


Vice Chancellor



Date : 05/10/2019

Chennai - 600 048, Tamil Nadu, India



Prepared by	
Verified by	





Folio No. 15B01 Serial No. C1060

B.Tech. Degree Examinations Consolidated Grade Sheet

Name of the Candidate		MOHAMED ASLAM SHA. A		Register No.			150011601139	
Date of Birth		01 Jun 1997	Gender	Male	Month & Year of Last Appearance		May 2019	
Branch		Civil Engineering						
Semester	Course Code	Course Title			Credits	Letter Grade	Grade Point	Month & Year of Passing
I	MAB 1181	Algebra, Geometry and Calculus			4	B	8	Dec 2015
I	PHB 1181	Physics			3	D	6	Dec 2015
I	CHB 1181	Chemistry			3	C	7	Dec 2015
I	GEB 1101	Engineering Graphics			3	D	6	Dec 2015
I	GEB 1103	Computer Programming and Applications			3	B	8	Dec 2015
I	ENB 1181	English			3	B	8	Dec 2015
I	SSB 1182	Sociology, Ethics and Human Values			3	D	6	Dec 2015
I	PHB 1182	Physics Laboratory			1	B	8	Dec 2015
I	CHB 1182	Chemistry Laboratory			1	D	6	Dec 2015
I	GEB 1102	Basic Engineering Practices Laboratory			1	A	9	Dec 2015
II	MAB 1282	Advanced Calculus			4	B	8	May 2016
II	CHB 1283	Chemistry of Building Materials			3	A	9	May 2016
II	GEB 1211	Basic Engineering Mechanics			4	B	8	May 2016
II	CEB 1211	Engineering Geology			3	B	8	May 2016
II	CEB 1212	Construction Materials and Practices			3	D	6	May 2016
II	SSB 1181	Introduction to Economics			3	A	9	May 2016
II	ENB 1282	Written Communication			1	B	8	May 2016
II	CEB 1213	Computer Practice Laboratory			1	A	9	May 2016
II	CHB 1284	Chemistry of Building Materials Laboratory			1	A	9	May 2016
III	MAB 2181	Transforms and Applications			4	B	8	Dec 2016
III	LSB 2181	Biology for Engineers			3	S	10	Dec 2016
III	CEB 2101	Mechanics of Solids			4	C	7	Dec 2016
III	CEB 2102	Mechanics of Fluids			4	S	10	Dec 2016
III	CEB 2103	Concrete Technology			3	B	8	Dec 2016
III	CEB 2104	Surveying			3	A	9	Dec 2016
III	CEB 2105	Surveying Laboratory - I			1	B	8	Dec 2016
III	CEB 2106	Construction Materials Laboratory			1	S	10	Dec 2016
III	CEB 2107	Civil Engineering Drawing			1	S	10	Dec 2016
III	ENB 2181	Oral Communication			1	A	9	Dec 2016
IV	MAB 2283	Applied Numerical Methods			4	A	9	May 2017
IV	SSB 2181	Law for Engineers			3	A	9	May 2017
IV	CEB 2211	Strength of Materials			3	S	10	May 2017
IV	CEB 2212	Hydraulic and Hydraulic Machinery			4	S	10	May 2017
IV	CEB 2213	Water and Waste Water Engineering			4	A	9	May 2017
IV	CEB 2214	Transportation Engineering - I			3	S	10	May 2017
IV	CEB 2215	Surveying Laboratory - II			1	S	10	May 2017
IV	CEB 2216	Strength of Materials Laboratory			1	A	9	May 2017
IV	CEB 2217	Hydraulic Engineering Laboratory			1	S	10	May 2017
IV	ENB 2282	Confidence Building and Behavioral Skill			1	S	10	May 2017
V	CEB 3101	Structural Analysis - I			3	A	9	Dec 2017
V	CEB 3102	Design of Steel Structures			4	B	8	Dec 2017
V	CEB 3103	Geotechnical Engineering - I			3	A	9	Dec 2017
V	CEB 3104	Transportation Engineering - II			3	S	10	Dec 2017
V	CEBX 32	Building Services			3	S	10	Dec 2017
V	GEB 3201	Environmental Science and Engineering			3	S	10	Dec 2017
V	CEB 3105	Concrete and Highway Laboratory			1	S	10	Dec 2017
V	CEB 3106	Geotechnical Engineering Laboratory			1	S	10	Dec 2017
V	CEB 3107	Environmental Engineering Laboratory			1	S	10	Dec 2017
V	ENB 3181	Career Building and People Skill			1	A	9	Dec 2017
VI	CEB 3211	Structural Analysis - II			4	S	10	May 2018
VI	CEB 3212	Design of RCC			4	S	10	May 2018
VI	CEB 3213	Geotechnical Engineering - II			3	A	9	May 2018
VI	CEBX 05	Repair and Rehabilitation of Structures			3	A	9	May 2018
VI	CEBX 16	Solid Waste Management			3	S	10	May 2018
VI	MSB 4181	Leadership and CEO Training			3	A	9	May 2018
VI	CEB 3214	Computer Modeling and Structural Design Laboratory			1	S	10	May 2018
VI	CEB 3215	Seminar			1	A	9	May 2018
VI	CEB 3216	Survey and Soil Investigation Camp			1	S	10	May 2018
VII	CEB 4101	Prestressed Concrete			3	A	9	Dec 2018
VII	CEB 4102	Estimation and Costing			3	A	9	Dec 2018
VII	CEB 4103	Construction Management			3	A	9	Dec 2018
VII	CEB 4104	Remote Sensing and GIS			3	A	9	Dec 2018
VII	CEB 4105	Irrigation Engineering			3	B	8	Dec 2018
VII	CEBX 20	Environmental Geotechnology			3	S	10	Dec 2018
VII	MSB 4182	Social Entrepreneurship			3	A	9	Dec 2018
VII	CEB 4106	Design Project			1	A	9	Dec 2018
VII	CEB 4107	Irrigation and Environmental Engineering Drawing			1	A	9	Dec 2018
VII	CEB 4108	Geographic Information Systems Laboratory			1	A	9	Dec 2018
VII	CEB 4109	Industrial Internship			1	A	9	Dec 2018
VIII	CEBX 37	Smart Cities Planning and Development			3	A	9	May 2019
VIII	GEBX 201	Green Design and Sustainability			3	S	10	May 2019
VIII	CEB 4211	Project Work			9	S	10	May 2019

End of Statement

Semester	I	II	III	IV	V	VI	VII	VIII
Grade Point Average (GPA)	7.12	8.09	8.72	9.52	9.35	9.57	9	9.8
Cumulative Credits Earned	184							8.84
Class Obtained	FIRST CLASS WITH DISTINCTION							

Medium of Instruction: English

Chennai - 600 048, INDIA
Date: 10/06/2019

Signature of the Candidate

Controller of Examinations
M. A. Ali

Grade Classification

Letter Grade	S	A	B	C	D	E
Grade Point	10	9	8	7	6	5

Formula for GPA & CGPA

$$\text{GPA / CGPA} = \frac{\sum_{i=1}^n C_i GP_i}{\sum_{i=1}^n C_i}$$

where

C_i - is the number of credits assigned to the course

GP_i - is the corresponding grade point obtained for the course

n - is number of courses registered during the particular semester / trimester in the case of GPA and during all the semesters / trimesters in the case of CGPA

CGPA	Classification
8.50 and above (completed all courses in first appearance)	First Class with Distinction
6.50 and above (completed within a period of 2 semesters / 3 trimesters beyond the programme period)	First Class
All others	Second Class





buildingSMART Professional Certification-Entry Badge (German)

Awarded to Aslam Sha Anvar Mohamed

Issued 22 June 2024, 11:57 AM

Issued by buildingSMART International

Course: Entry Level Exam

This badge attests to the basic knowledge and comprehension of openBIM principles. Students are awarded this badge upon successfully passing the buildingSMART "Entry" level exam. To share a verifiable link of your badge (with meta data) you will need to copy and paste the URL of this page. Dieses Abzeichen bescheinigt die Grundkenntnisse und das Verständnis der openBIM-Prinzipien. Die Teilnehmer erhalten dieses Abzeichen nach erfolgreichem Bestehen der buildingSMART-Prüfung der Stufe „Entry“. Um einen überprüfbaren Link zu Ihrem Abzeichen (mit Metadaten) zu teilen, müssen Sie die URL dieser Seite kopieren und einfügen

Criteria

- The following activity has to be completed:
"Quiz - Start Prüfung (Deutsch)"



4 Courses

Introduction to Machine Learning in Production

Machine Learning Data Lifecycle in Production

Machine Learning Modeling Pipelines in Production

Deploying Machine Learning Models in Production



Apr 7, 2024

Aslam Sha Anvar Mohamed

has successfully completed the online, non-credit Specialization

Machine Learning Engineering for Production (MLOps)

Congratulations! You have completed all four courses of Machine Learning Engineering for Production (MLOps) Specialization. In this Specialization, you learned how to conceptualize and maintain integrated systems. You mastered well-established tools and methodologies to build production systems that can handle relentless evolving data and continuously run at maximum efficiency. You're now familiar with the capabilities, challenges, and consequences of machine learning engineering in production and are ready to level up your career by participating in the development of leading-edge AI technology and solving real-world problems.

John Ng, MLOps Engineer, Coursera

Andrew Ng,
Founder,
DeepLearning.AI

Robert Crowe
TensorFlow Developer
Engineer, Google

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
<https://coursera.org/verify/specialization/9HTQBCKPG5LD>



Stanford | ONLINE

Mar 8, 2024

Aslam Sha Anvar Mohamed

has successfully completed

Advanced Learning Algorithms

an online non-credit course authorized by DeepLearning.AI and Stanford University and offered through Coursera

Andrew Ng, Instructor, DeepLearning.AI

COURSE CERTIFICATE



Verify at:

<https://coursera.org/verify/PJLXWVMVKBFN>

Coursera has confirmed the identity of this individual and their participation in the course.



Stanford | ONLINE

Mar 2, 2024

Aslam Sha Anvar Mohamed

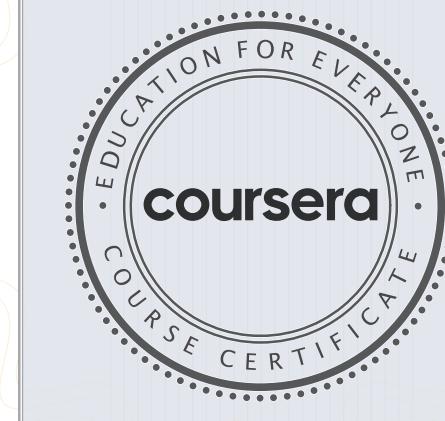
has successfully completed

Supervised Machine Learning: Regression and Classification

an online non-credit course authorized by DeepLearning.AI and Stanford University and offered through Coursera

Andrew Ng, Instructor, DeepLearning.AI

COURSE CERTIFICATE



Verify at:
<https://coursera.org/verify/NUK2ZA3RLEJS>

Coursera has confirmed the identity of this individual and their participation in the course.

Test Report Form

ACADEMIC

NOTE Admission to undergraduate and post graduate courses should be based on the ACADEMIC Reading and Writing Modules.

GENERAL TRAINING Reading and Writing Modules are not designed to test the full range of language skills required for academic purposes.

It is recommended that the candidate's language ability as indicated in this Test Report Form be re-assessed after two years from the date of the test.

Centre Number

IN001

Date

11/JAN/2020

Candidate Number

313204

Candidate Details

Family Name

-

First Name

ANVAR MOHAMED ASLAM SHA

Candidate ID

M7917045



Date of Birth

01/06/1997

Sex (M/F)

M

Scheme Code

Private Candidate

Country or Region of Origin

Country of Nationality

First Language

INDIA

URDU

Test Results

Listening

8.5

Reading

8.5

Writing

6.0

Speaking

7.0

Overall Band Score

7.5

CEFR Level

C1

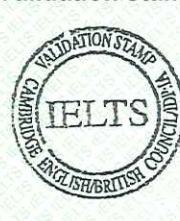
Administrator Comments

(Large empty box for administrator comments)

Centre stamp



Validation stamp



Administrator's Signature

Date

24/01/2020

Test Report Form Number

19IN313204TA001A

BAND 9**EXPERT USER**

Has fully operational command of the language: appropriate, accurate and fluent with complete understanding.

BAND 8**VERY GOOD USER**

Has fully operational command of the language with only occasional unsystematic inaccuracies and inappropriacies. Misunderstandings may occur in unfamiliar situations. Handles complex detailed argumentation well.

BAND 7**GOOD USER**

Has operational command of the language, though with occasional inaccuracies, inappropriacies and misunderstandings in some situations. Generally handles complex language well and understands detailed reasoning.

BAND 6**COMPETENT USER**

Has generally effective command of the language despite some inaccuracies, inappropriacies and misunderstandings. Can use and understand fairly complex language, particularly in familiar situations.

BAND 5**MODEST USER**

Has partial command of the language, coping with overall meaning in most situations, though is likely to make many mistakes. Should be able to handle basic communication in own field.

BAND 4**LIMITED USER**

Basic competence is limited to familiar situations. Has frequent problems in understanding and expression. Is not able to use complex language.

BAND 3**EXTREMELY LIMITED USER**

Conveys and understands only general meaning in very familiar situations. Frequent breakdowns in communication occur.

BAND 2**INTERMITTENT USER**

No real communication is possible except for the most basic information using isolated words or short formulae in familiar situations and to meet immediate needs. Has great difficulty understanding spoken and written English.

BAND 1**NON USER**

Essentially has no ability to use the language beyond possibly a few isolated words.

BAND 0**DID NOT ATTEMPT THE TEST**

No assessable information provided.

