

Congratulations on completing your education

Take good care of your diploma, it is only issued once. We recommend that you make sufficient number of copies, and that you keep the original in a safe place.

Diploma Registry

You can share your results from higher education in Norway and share them with potential employers and others through the public diploma registry portal. You can find more information regarding the diploma portal here: <https://www.vitnemalsportalen.no/english/>

Access to open courses at NTNU

When you have completed and passed a degree at NTNU (bachelor, master or Ph.D.), you have the opportunity to apply for a student status that gives you access to open courses. You can find more information on open courses studies here:

<https://www.ntnu.edu/studies/admission/completeddegree>

Alumni Network

NTNU Alumni is a network for NTNU's former students, current students and employees. It is a meeting place for knowledge sharing and exchange of experience between NTNU and the social- and working life. You can read more about the alumni network here:

<https://www.ntnu.edu/alumni>

Sincerely,

Norwegian University of Science and Technology

Address	Org. no. 974 767 880	Location	Phone	Executive officer
7491 Trondheim Norway	postmottak@ntnu.no www.ntnu.no	Høgskoleringen 1 Hovedbygningen	+47 73595000	

Please address all correspondence to the organizational unit and include your reference.

Norwegian University of Science and Technology
Faculty of Engineering

DIPLOMA

Yaolin Ge

born 20 October 1996

has 1 June 2020 been awarded the degree

Master of Science in Maritime Engineering

Programme of Study: Maritime Engineering

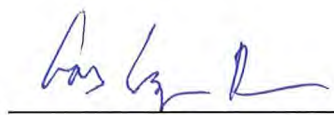
Study Track: Small Crafts

Thesis Title: Development of an underwater ruler using an AUV-deployed
beacon and Matched filter CFAR detector

The diploma is issued 12 October 2020.



Dean of Faculty



Faculty Officer

General information about the degree

Master of Science in Maritime Engineering is awarded in accordance with the Regulations on Degrees and Titles Protected by Law of 16 December 2005 (No. 1574). The nominal length of study for the degree is 2 years and it comprises 120 ECTS credits. One completed year of study has nominally 60 ECTS credits. Master of Science in Maritime Engineering is a qualification that is part of second cycle/level 7 in the Norwegian Qualifications Framework for Lifelong Learning, approved by the Ministry of Education and Research on 15.12.2011.

Objectives, content and organisation of the programme of study

The Master of Science (M.Sc.) Programmes in Technology are two-year professional education programmes within a given technological field. NTNU currently offers around 30 Master of Science programmes in Technology, of which half are international Master's programmes. All international Master of Science programmes are taught in English.

MSc programmes consist of compulsory courses and elective courses. The proportion of each category of courses varies depending on the programme. The first semester consists mainly of compulsory courses. Students usually work on a project in their third semester, and a mandatory written thesis in the fourth semester marks the completion of all programmes. The thesis topic typically addresses a particular area within the candidate's field of interest. In most cases the thesis has a workload equivalent to 30 ECTS credits. A student may take additional courses beyond the required 120 ECTS credits, provided that the additional courses do not prolong the student's studies in the programme.

The candidate's learning outcomes

Knowledge:

A Master of Science in Technology shall have:

- Broad basic knowledge in Mathematics, Science, Technology and Computer Science as a basis for understanding methods, applications, professional renewal and adaptations
- Broad engineering- and research-based knowledge in Maritime Engineering, with in-depth knowledge within a more limited area connected to active research, including sufficient professional insight to make use of new research results
- Insight in selected social science, humanistic, and other non-technical disciplines of relevance to the exercise of the engineering profession, and as a basis for developing a broad perspective on the engineering discipline's role and challenges in the society

Skills:

- Define, model and break down complex engineering problems, including choosing relevant models and methods, and carrying out calculations and solutions independently and critically
- Develop comprehensive solutions to engineering problems, including the ability to develop solutions in an inter-disciplinary context, and carry out an independent, particular engineering research and development project under academic supervision
- Be able to renew and adapt professionally, including develop professional competence on his/her own initiative

General competence:

- Understand the role of engineer in a comprehensive societal perspective, have insight in ethical requirements and consideration of sustainable development, and be able to analyse ethical problems connected to engineering work, and contribute to innovation and entrepreneurship
- Ability to disseminate, communicate and cooperate inter-disciplinary on engineering problems and solutions to specialists and the general public
- Understand possibilities and limitations when using information and communication technology, including juridical and societal aspects
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Transcript of Records

Norwegian University of Science and Technology

Name: **Ge, Yaolin**

Date of birth: 1996-10-20

Degree: Master of Science in Maritime Engineering

Received: 2020-06-01

Study programme: Maritime Engineering

Study Track: Small Crafts

Course		Semester	Credits	Grade	Grade ¹⁾ distribution
					A B C D E
1 Year					
TMR4115	Design Methods	2018 autumn	7.5	B	
TMR4190	Finite Element Methods in Structural Analysis	2018 autumn	7.5	A	
TMR4305	Advanced Analysis of Marine Structures	2018 autumn	7.5	A	
TMR4320	Simulation-Based Design	2018 autumn	7.5	A	
TMR4120	Underwater Engineering, Basic Course	2019 spring	7.5	A	
TMR4217	Hydrodynamics for High-Speed Marine Vehicles	2019 spring	7.5	B	
TMR4220	Naval Hydrodynamics	2019 spring	7.5	A	
TMR4290	Marine Electric Power and Propulsion Systems	2019 spring	7.5	A	
2 Year					
DD2325	Applied Programming and Computer Science (Royal Institute of Technology)	2019 autumn	7.5	Recognized	
EQ2300	Digital Signal Processing (Royal Institute of Technology)	2019 autumn	7.5	Recognized	
SD2709	Underwater Technology (Royal Institute of Technology)	2019 autumn	7.5	Recognized	
SD2711	Small Craft Design (Royal Institute of Technology)	2019 autumn	10	Recognized	
SD271X	Degree Project in Naval Architecture, Second Cycle (Royal Institute of Technology)	2020 spring	30	Recognized	
	<i>Development of an underwater ruler using an AUV-deployed beacon and Matched filter CFAR detector</i>				
			Total: 122.5		

12 October 2020



Executive Officer

1) For an explanation of the grade distribution, see the last page.

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Credit system and grading

The academic year normally runs from mid-August to mid-June and lasts for 10 months. Courses are measured in "studiepoeng", considered equivalent to the European Credit Transfer System standard (ECTS credits). The full-time workload for one academic year is 1500 - 1800 hours of study / 60 "studiepoeng".

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D	Satisfactory	A satisfactory performance, but with significant shortcomings. The candidate demonstrates a limited degree of judgement and independent thinking.
E	Sufficient	A performance that meets the minimum criteria, but no more. The candidate demonstrates a very limited degree of judgement and independent thinking.
F	Fail	A performance that does not meet the minimum academic criteria. The candidate demonstrates an absence of both judgement and independent thinking.

The assessment is criterion referenced.

Grade distribution

The distribution of grades is shown by the percentage for courses using the graded scale A – F. Fail (F) is not included in the distribution. All results from the last five years are included in the calculation. The distribution is also shown for courses that have been active for less than five years. There has to be at least 10 approved results during the period.

This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualification (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

- 1.1 Family name(s): Ge
- 1.2 Given name(s): Yaolin
- 1.3 Date of birth (day/month/year): 20-10-1996
- 1.4 Student identification number or code: 499903

2 INFORMATION IDENTIFYING THE QUALIFICATION

- 2.1 Name of qualification and (if applicable) title conferred (in original language):
Master of Science in Maritime Engineering
The title master is protected by law in Norway.
- 2.2 Main field(s) of study for the qualification:
Small Crafts
Technological subjects
Marine Technology
- 2.3 Name and status of awarding institution (in original language):
Norges teknisk-naturvitenskapelige universitet, a public university. The quality assurance system was evaluated and approved by the Norwegian Agency for Quality Assurance in Education in 2014.
- 2.4 Name and status of institution administering studies:
See section 2.3
- 2.5 Language(s) of instruction/examination:
English

3 INFORMATION ON THE LEVEL OF THE QUALIFICATION

- 3.1 Level of qualification:
Second Cycle/Level 7, Norwegian Qualifications Framework for Lifelong Learning
- 3.2 Official length of the programme:
2 years (120 ECTS credits)
- 3.3 Access requirements:
Admission criteria to the programme is a Bachelor's degree encompassing a minimum of 180 ECTS credits in: Naval Architecture (accepted by all universities) or Mechanical Engineering (accepted by Aalto, Chalmers and KTH only)

4 INFORMATION ON THE CONTENTS AND RESULTS GAINED

- 4.1 Mode of study:
Full time
- 4.2 Programme requirements:
A Master of Science programme extends over two academic years (4 semesters) and constitutes a course load of

120 ECTS credits. All 2-year Master's programmes offer a combination of compulsory and elective courses. In order to graduate from a Master of Science programme a student must have completed all compulsory courses, as well as a sufficient number of elective courses to achieve the total 120 ECTS credits required to complete the programme.

The proportion of compulsory and elective courses varies from programme to programme. However, the following elements are common to all our 2-year MSc programmes in Technology:

- A combination of compulsory and elective courses within the MSc degree's academic area
- The interdisciplinary project course Experts in Teamwork, 7,5 ECTS
- Specialized engineering project within a field related to the student's Master's thesis, 7,5 or 15 ECTS
- Specialization course focusing on a topic related to the student's specialized engineering project, 7,5 ECTS
- Master's thesis, 30 ECTS

In addition to courses in Engineering, the majority of our programmes also include a 7,5 ECTS non-technical course in areas such as Economics, Management, Marketing, Cultural Studies, Political Science, Foreign Languages, Psychology or similar (Complementary course).

In Norway, at least 80 ECTS credits are required for a programme to be accepted as a specialization. In Engineering education all credits, except those given in non-technological subjects, count towards fulfilling this requirement.

The course structure of Joint Master's programmes given in cooperation with partner universities, such as Erasmus Mundus programmes or Joint Nordic Masters' programmes, may differ somewhat from the course structure outlined above.

The candidate's learning outcomes

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4.3 Programme details:

Name: Yaolin Ge

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D	Satisfactory	A satisfactory performance, but with significant shortcomings. The candidate demonstrates a limited degree of judgement and independent thinking.
E	Sufficient	A performance that meets the minimum criteria, but no more. The candidate demonstrates a very limited degree of judgement and independent thinking.
F	Fail	A performance that does not meet the minimum academic criteria. The candidate demonstrates an absence of both judgement and independent thinking.

The assessment is criterion referenced.

Grade distribution

The distribution of grades is shown by the percentage for courses using the graded scale A – F. Fail (F) is not included in the distribution. All results from the last five years are included in the calculation. The distribution is also shown for courses that have been active for less than five years. There has to be at least 10 approved results during the period.

4.4 Grading scheme and, if available, grade distribution guidance:

See section 4.3

The Norwegian scale of grades is based on the European ECTS grading scale, with letters from A to F or Passed/Failed. There is only one grade for failed, F. This is different from the ECTS grading scale that has two grades for failed. Some assignments, field work or similar work may be graded Completed/Not completed. The percentages are only used for conversion to letter-based grades in single courses.

Norwegian grades - Equivalent percentages:

A: Excellent. An impressive and truly distinguished achievement - 89-100 %

B: Very good. An achievement definitely above average - 77-88 %

C: Good. An average achievement without essential discrepancies - 65-76 %

D: Satisfactory. An acceptable achievement but with some discrepancies - 53-64 %

E: Sufficient. A just acceptable achievement with major discrepancies - 41-52 %

F: Failed. A non-acceptable achievement - 0-40 %

In Norway, A should be the grade for an excellent performance, and C should be the average grade over any large population and a long period of time. There is no demand for a statistical distribution of grades in a specified population or class. All grades are to be used equally at all levels of the education, which means that C should be the average grade both at bachelor's and master's levels.

MSc theses handed in for evaluation no later than 31st of March 2014 have been and will still be evaluated according to a grading practice within which mainly the upper part of the grading scale is used. Theses handed in for evaluation after 31st of March 2014 will now be evaluated according to a new practice where the whole grading scale, A - F, is used.

4.5 Overall classification of the qualification (in original language):

Not applicable

5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1 Access to further study:

The Master of Science degree gives admission to a PhD programme if the candidate has a grade point average (GPA) of B or better.

5.2 Professional status:

A Master's degree in Maritime Engineering is a qualification to work in the private sector or the public sector, including central and local government administration. Also numerous other fields that requires knowledge and familiarity with academic and scientific approaches.

6 ADDITIONAL INFORMATION

6.1 Additional information:

Not applicable.

6.2 Further information sources:

Norwegian University of Science and Technology: <http://www.ntnu.edu/>

NOKUT - Norwegian Agency for Quality Assurance in Education: <http://www.nokut.no/en/>

7 CERTIFICATION OF THE SUPPLEMENT

7.1 Date: 12 October 2020

Date of original qualification: 1 June 2020

7.2 Signature:



Anne Grethe Bjørgan
Higher Executive Officer

7.3 Capacity:

7.4 Official stamp



8. INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

Higher education in Norway: Legislature

The Ministry of Education and Research has the overall responsibility for higher education in Norway. Higher education is offered by four types of higher education institutions: university (*universitet*), specialized university institution (*vitenskapelig høyskole*), accredited university college (*akkreditert høyskole*), and university college with accredited study programmes (*høyskole med akkrediterte studier*). The differences between the types of higher education institutions are related to their self-accrediting authority.

All public and private higher education in Norway is subject to the Act Relating to Universities and University Colleges (Lov 2005-04-01 nr 15). An institution's right to award specific degrees and the prescribed lengths of study are codified in Regulation concerning degrees and titles (FOR 2005-12-16 nr 1574). The awarding of master's degrees is regulated by the Regulations on requirements for awarding a master's degree (FOR 2005-12-01 nr 1392).

Since 2002 Norway has adhered to the objectives of the Bologna Process in the European Higher Education Area. Most of the elements have been implemented through the reform of the Norwegian higher education system carried out in 2003. Central to the reform has been a transition from the former degree system to the bachelor's, master's and doctoral degree structure, with a few exceptions.

Norwegian higher education qualifications make up the levels from 6 to 8 of the Norwegian Qualifications Framework for Lifelong Learning (NQF) from 2011, which is the national overarching qualifications framework¹. It describes the levels of qualifications as defined by the total learning outcomes in terms of the knowledge, skills and general competence that graduates at various levels should have achieved².

NQF was referenced to the European Qualifications Framework (EQF) in 2014.

Quality assurance and accreditation of institutions and programmes

The Norwegian Agency for Quality Assurance in Education (NOKUT) is an autonomous governmental agency which provides external supervision and control of the quality of Norwegian higher education, as well as of all tertiary vocational education³. NOKUT accredits new study programmes, controls the existing ones, and provides a cyclic evaluation of the institutions' quality assurance systems for educational provision.

An accredited higher education institution is granted the right to offer educational provision, without having to apply to NOKUT for specific programme accreditation, in accordance with the authority that its institutional category implies:

- a) Universities may without external accreditation establish study programmes at all levels.
- b) Accredited university colleges have to apply for the accreditation of programmes at master and doctoral levels.
- c) In those fields where specialized university institutions and accredited university colleges have the right to award doctorates or corresponding degrees, they may themselves decide which study programmes and disciplines the institution shall provide.

University colleges without institutional accreditation must apply to NOKUT for accreditation of study programmes at all levels.

Lists of all accredited institutions, as well as of all accredited study programmes at the university colleges without institutional accreditation are available on www.nokut.no

Admission requirements

The Higher Education Entrance Qualification is the successful completion of Norwegian upper secondary education with some specified courses. The Certificate of Upper Secondary Education and Training (*Vitnemål for videregående opplæring*) is based on 13 years of schooling.

Admission may also be gained by means of other qualifications recognized as being on a par with the Higher Education Entrance Qualification, such as recognition of prior learning and work experience.

Some fields of study have additional entrance requirements.

Academic credit system

All Norwegian higher education institutions use a system of credits (*studiepoeng*) for measuring study activities considered equivalent to the European Credit Transfer and Accumulation System (ECTS). 60 ECTS credits (*studiepoeng*) are allocated to the workload of a full year of academic study, equivalent to 1500-1800 hours of study. 30 ECTS credits are normally allocated to one semester's full-time study. The academic year normally lasts for 10 months and runs from August to June.

¹ National generic learning outcomes descriptions' levels for the bachelor's, master's and doctoral degrees were defined by the Instructions on the Norwegian Qualifications Framework for Higher Education in 2009.

² Learning outcomes for a specific NQF level show the minimum of what each learner should know, understand and be able to do after completing a learning process.

³ Tertiary vocational education (TVE), level 5 in the NQF (EQF), is provided by *fagskoler*, which are considered as tertiary vocational education institutions. TVE is based on upper secondary education and training or equivalent competence. Courses have duration of from six months to two years. All provisions must be accredited by NOKUT.

Degrees and qualifications

NQF (EQF) Level 6: Bachelor (1st cycle)

Bachelor's degree is awarded after three years of full-time study (180 ECTS). Some bachelor's degrees, in the field of music and performing arts, consist of four-year bachelor's programmes (240 ECTS).

Teacher education for primary and lower secondary school, years 1-7 and years 5-10 has been a four-year professional programme (240 ECTS) prior to its reform on 1 January 2017, when it became a five-year integrated master's degree.

University college graduate (*høyskolekandidat*) is a two-year degree (120 ECTS), a short cycle degree within the first cycle. Holders of this degree may in some cases continue their studies in a bachelor programme and thus obtain a bachelor's degree.

NQF (EQF) Level 7: Master (2nd cycle)

Master's degree is normally obtained after two years of study (120 ECTS), following the completion of a bachelor's degree. A master's degree programme includes independent work (normally a thesis) of between 30 and 60 ECTS.

Experience-based master's degree has a scope of 90 or 120 ECTS (including independent work of at least 20 ECTS).

Integrated master's degree is a five-year study programme (300 ECTS) which results in a master's degree, with no intermediate bachelor's degree. An exception is

the Master of Architecture programme at the Oslo School of Architecture and Design, which has a scope of 330 ECTS.

In the fields of medicine, psychology and theology, **professionally oriented degrees/qualifications** of six years' duration (360 ECTS) are awarded; in the field of veterinary science - after 5 ½-6 years. They have retained the title/degree *candidata/candidatus* from the former degree system.

NQF (EQF) Level 8: Doctoral degree (3rd cycle)

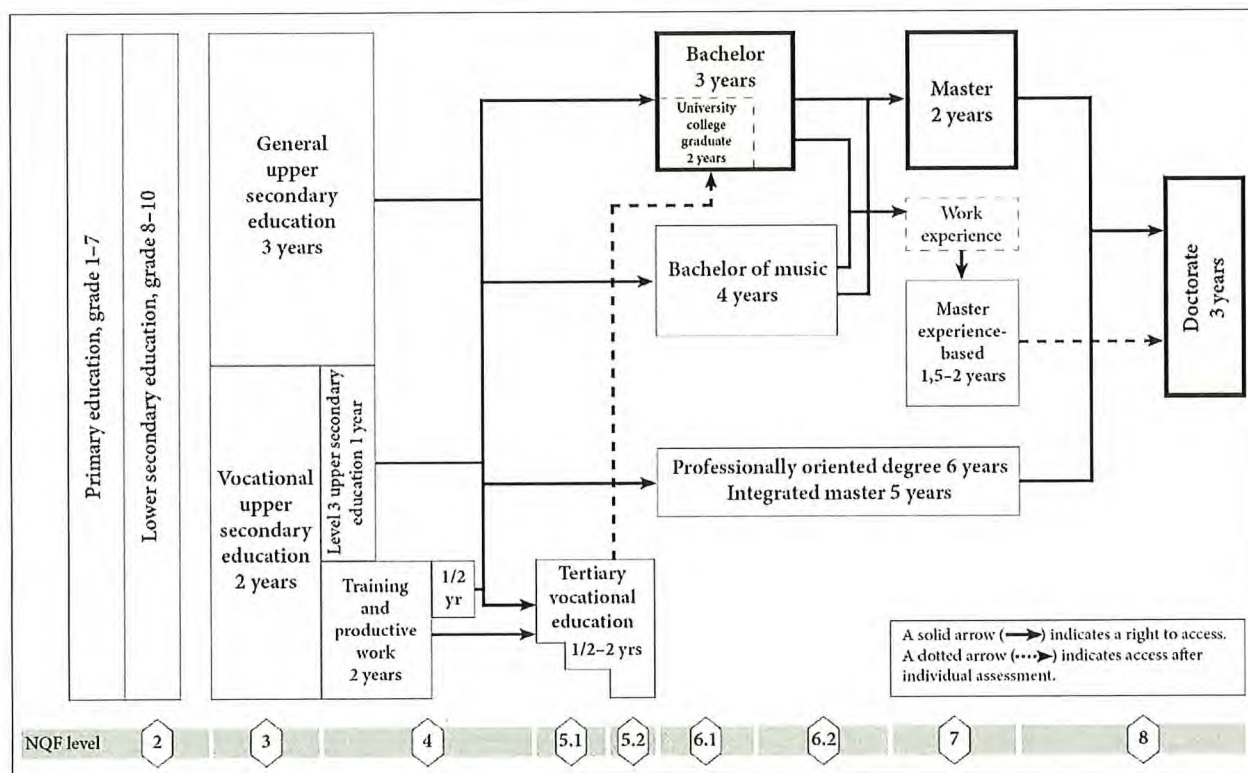
Philosophiae doctor (*ph.d.*), is awarded after three years of study, following the completion of a master's degree or a five to six-year professionally oriented degree/qualification.

Doctor philosophiae (*dr. philos.*) is conferred on graduates who have qualified for a doctoral degree on their own, without formal research training.

Diploma, artistic development programme (*kunstnerisk utviklingsprogram*) is a three-year programme in the field of creative and performing arts. Replaced on 1 February 2018 by the new doctoral degree *ph.d. i kunstnerisk utviklingsarbeid*.

Descriptions of the educational qualifications are given in the Norwegian Qualifications Framework for Lifelong Learning at www.nokut.no/nkr

The Norwegian Education System



NOKUT, April 2018



DIPLOM

Kungliga Tekniska högskolan gör veterligt att

Yaolin Ge

har avlagt examen och förklaras därav för

TEKNOLOGIE MASTER

Stockholm, 18 december 2020

SIGBRITT KARLSSON,
Rektor



Dear diplomandi!

This year, nothing is the same. But it is important to take advantage of the things that bring joy. It is therefore with great pleasure that I personally want to congratulate you on your degree.

I look forward to this year's digital Graduation Ceremony when we meet online to celebrate the big event in solemn forms.

Sigbritt Karlsson, KTH President



Kära diplomand!

Det här året är ingenting sig likt. Men det gäller att ta vara på ljusglimtarna.
Det är därför med extra stor glädje jag vill gratulera dig till din examen.

Jag ser fram emot årets digitala diplomeringsceremoni då vi ses online för att fira denna stora
tilldragelse under högtidliga former.

Sigbritt Karlsson, rektor KTH



Bye student, welcome alum!

Dear KTH-alum,

As a former KTH-student, you now have the opportunity to be part of a network of over 100,000 KTH-alumni worldwide free of charge. We help you stay in touch with other KTH-alumni no matter where you are!

We also hope to see you as e.g. a mentor or a guest lecturer for tomorrow's engineering and architectural students. As an alum, there are many ways to get involved.

You have an exciting journey ahead of you - and we would love to be a part of it.

Please register your contact details at www.kth.se/en/alumni/ to stay in touch with KTH.

Best regards,

Karin Davéus

Director of Alumni Relations at KTH



Hejdå student, välkommen alumn!

Bästa KTH-alumn,

Som tidigare KTH-student har du nu möjlighet att utan kostnad ingå i ett nätverk med över 100 000 KTH-alumner världen över. Vi hjälper dig att hålla kontakten med andra KTH:are oavsett var du är!

Vi hoppas också på att få se dig som t.ex. mentor eller gästföreläsare för morgondagens teknologer och arkitektstudenter. Som alumn finns det många sätt att engagera sig på.

Du har en spännande resa framför dig - och vi vill gärna vara en del av den. Vänligen registrera dina kontaktuppgifter på www.kth.se/alumni för att fortsätta hålla kontakten med KTH.

Med vänliga hälsningar,

Karin Davéus

Ansvarig alumnrelationer på KTH