**Themen für Abschlussarbeiten und Projekte**

1. Integration einer Amarisoft-5G-Basisstation und der 5G Core-Implementierung Free5GC (Kumar Satyam, Individual Project)

Integration of an Amarisoft 5G Base Station and the 5G Core Implementation Free5GC

**Dokumente/Links/Tutorials**

OAI (Open Air Interface) 5G Core Network <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-fed>:

* Tutorials <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-fed/-/tree/master/docs>
* Docker Compose <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-fed/-/tree/master/docker-compose>
* Network Functions:
  + AMF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-amf>
  + AUSF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-ausf>
  + NRF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-nrf>
  + SMF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-smf>
  + UDM <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-udm>
  + UDR <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-udr>
  + UPF <https://github.com/OPENAIRINTERFACE/openair-spgwu-tiny>

<https://github.com/OPENAIRINTERFACE/openair-spgwu-tiny> (not tested!)

* + NSSF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-nssf>
  + NEF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-nef>
  + PCF <https://gitlab.eurecom.fr/oai/cn5g/oai-cn5g-pcf>
* gNB <https://gitlab.eurecom.fr/oai/openairinterface5g>
  + Documents <https://gitlab.eurecom.fr/oai/openairinterface5g/-/tree/develop/doc>
* O-RAN <https://openairinterface.org/mosaic5g/>
  + <https://gitlab.eurecom.fr/mosaic5g/flexric>

Open5gs <https://open5gs.org/open5gs/>

* Documentation/Tutorials <https://open5gs.org/open5gs/docs/>
* GitHub <https://github.com/open5gs/open5gs>

Free5GC <https://free5gc.org/> (NEF NWADF)

* Documentation/Tutorial <https://free5gc.org/guide/>
* GitHub <https://github.com/free5gc/free5gc>

Amarisoft <https://www.amarisoft.com/>

* Documentation/Tutorials <https://tech-academy.amarisoft.com/> (not open)
  + Open5GS + Amarisoft
  + NW3IF
  + Network Slicing
  + Etc.

AW2S (Outdoor Antenna) <https://supportaw2s.serma.com/projects/aw2s-wiki/wiki> (not open)

Digital Twin Network

* NVIDIA Omniverse <https://www.nvidia.com/en-us/omniverse/>
* Heavy AI <https://docs.heavy.ai/>
  + 5G <https://www.heavy.ai/learn/5g-infographic>

Completed theses and project works (accessable from the lab):

* Analyzation and Implementation of 5G Environment based on Amarisoft Callbox
* Investigation of the integration of non-3GPP Access Networks in the Amarisoft 5G System
* Integration of Raspberry Pi-Modules in a 5G system
* Entwicklung eines 5G/6G Gateways für Special Purpose Networks
* Implementation of a 5G network architecture with end-to-end network slicing
* Integration of an 5G Environment in CORE Network Emulator