Program Overview

Fellowship in Neuroradiology, Artificial Intelligence and Entrepreneurship

This Program Overview provides an insightful summary of the agenda designed for our comprehensive 52-week fellowship programme. We understand the importance of structure and well-planned learning experiences to maximize the educational journey of our participants. With this in mind, we have meticulously crafted a dynamic and engaging 52-week agenda that offers a diverse range of activities, enabling participants to dive deeply into various aspects of Neuroradiology, Artificial Intelligence and Entrepreneurship.

Weekly Schedule

Each week of the fellowship programme presents a unique opportunity for participants to immerse themselves in intensive learning, hands-on training, and interactive sessions. The weekly agenda has been thoughtfully curated to strike a balance between theoretical knowledge, practical application, and professional and scientific discussions. We aim to foster a stimulating environment where participants can expand their expertise, cultivate critical thinking skills, and develop lasting professional relationships.

Throughout the week, one can expect a blend of didactic lectures, case discussions, workshops, research opportunities, and clinical rotations. These carefully structured activities not only provide a comprehensive understanding of the subject matter but also allow participants to refine their diagnostic skills, enhance their decision-making abilities, and stay abreast of the latest advancements in their respective fields.

<table>
<tr><th>HORA</th><th>MONDAY</th><th>TUESDAY</th><th>WEDNESDAY</th><th>THURSDAY</th><th>FRIDAY</th><th>SATURDAY</th></tr>
<tr><td>09:00-09:30</td><td rowspan="2">General Training

Report Training</td><td colspan="4">Neuroradiology Pathological Conditions Analysis</td><td rowspan="11">Self-Study</td></tr>
<tr><td>09:30 - 11:00</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td></tr>
<tr><td>11:00 - 11:15</td><td colspan="5">Coffee Break</td></tr>
<tr><td>11:15-12:15</td><td rowspan="2">General Training

Report Training</td><td rowspan="2">General Training

Report Training</td><td>MDT Discussion</td><td rowspan="2">General Training

Report Training</td><td>Theme Presentation</td></tr>
<tr><td>12:15 - 13:15</td><td>General Training

Report Training</td><td>General Training

Report Training</td></tr>
<tr><td>13:15 - 13:45</td><td colspan="5">Lunch</td></tr>
<tr><td>13:45 - 15:45</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td></tr>
<tr><td>15:45 - 16:00</td><td colspan="5">Coffee Break</td></tr>
<tr><td>16:00 - 17:00</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

Report Training</td><td>General Training

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Report Training</td></tr>
<tr><td>17:00 - 17:30</td><td>Discussion</td><td>Discussion</td><td>Discussion</td><td>Discussion</td><td>Discussion</td></tr>
<tr><td>17:30 - 18:00</td><td colspan="5">Assessment</td></tr>
<tr><td>18:00</td><td colspan="5">Self-Study</td></tr>
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Table 1 - Representative weekly agenda of the fellowship program; In blue rows are represented the non-educational hours.

a) Neuroradiology Pathological Conditions Analysis

The supervisor will address any short questions raised in the cases, as well as any persistent questions regarding anatomy, MR signal changes, pitfalls, and normal vs. abnormal findings.

In this activity, the supervisor aims to present the main imaging pitfalls in one pathological condition, not directly limited to one anatomical joint but providing a general overview of the pathology or addressing any scientific doubts raised by the learner."

b) General Training or Reporting Training

There are two options available in the mornings:

a. **General Training:** If it is the fellow's first day or if the fellow specifically requested it, there will be a general training session covering the following topics:

- Software training set
- Data protection
- Structured reporting
- Fellowship general guidelines
- Ideas for future business or patents
- AI, labelling, and research resources
- Weekly radiology presentation methodology

b. **Reporting Training**:

This option provides general training on reporting MR studies in Neuroradiology. The training includes:

- 3 cases per hour/period
- Structured reporting according to predefined models
- Pre-reporting that will be extensively reviewed and discussed daily.

This activity is included in the recognized CME activity “Reading scientific and education material” as the cases are part of the educational material.

c) MDT Discussion (MDT/Radiologists/Informatics)

This weekly panel consists of at least 2 radiologists who engage in a general discussion of challenging cases. When available, clinicians are invited for clinical discussions. Additionally, other topics authorized for discussion include Artificial Intelligence challenges, labelling business plans with digital health and economics specialists, biomedical engineers, data scientists, etc. This meeting serves as a truly multidisciplinary team meeting, covering both clinical and non-clinical issues.

d) Theme Presentation and Review

These sessions serve as a platform for participants to present their in-depth exploration of the weekly themes, creating an interactive and collaborative learning environment.

Each week, participants have the opportunity to deliver 60-minute theoretical presentations that delve into critical aspects of the field. These presentations primarily focus on illuminating potential pitfalls, highlighting normal variants, and fostering insightful discussions on differential diagnoses. By delving into these nuanced topics, participants deepen their understanding of the complexities within Neuroradiology, Artificial Intelligence, and Entrepreneurship.

To ensure thorough preparation and active engagement, a comprehensive list of presentation subjects is provided at the beginning of the fellowship. This enables participants to embark on a journey of research, analysis, and critical thinking as they delve into the specific themes related to each week's focus.

The theme presentation sessions not only enable participants to share their knowledge and expertise but also foster a vibrant learning community where ideas are exchanged, perspectives are enriched, and new insights emerge. By actively participating in these sessions, participants contribute to the collective learning experience and broaden their horizons in the topics.

Weekly Presentations

Within this chapter, we present an insightful overview of the weekly themes that encompass our 52-week fellowship programme. The carefully curated topics represent a harmonious blend of Neuroradiology, AI, and Entrepreneurship, enabling you to grasp the interplay between these disciplines.

Below, you can find a table that outlines the weekly topics. This table serves as your compass, offering a clear roadmap of the thematic progression throughout the fellowship program.

Week	Topic
W1	Anatomy of the Brain
W2	Anatomy of the H/N including facial bones, temporal bone, TMJ
W3	Anatomy of the Cervical, Thoracic and Lumbar Spine
W4	Sacral Anatomy and Revision
W5	MRI sequences and general Technique
W6	Brain vascular pathology: acute
W7	Brain vascular pathology: chronic
W8	Brain and Cord Hemorrhage
W9	Brain solid masses: location and differentials
W10	Spine Degenerative Pathology and nerve root compression
W11	Post- Surgical Spine
W12	Spine infections and differentials
W13	Spine masses: intra and extra-axial
W14	Normal changes in the spine
W15	Congenital spine pathology
W16	Brain T2/FLAIR hyperintensities: Differentials
W17	Pituitary: normal and pathology differentials
W18	W18 Cerebral and Neck MR Angiogram: anatomy and Pathology
W19	Veno MR and Venous Thrombosis
W20	Demyelination and Vasculitis
W21	Hydrocephalus
W22	Brain Degenerative Multisystemic
W23	Dementia
W24	Temporal lobe pathology
W25	Cerebellopontine angle differentials
W26	Cerebellopontine angle and vessels
W27	Epilepsy: how to study and differentials
W28	Brain Microbleeds
W29	Orbit pathology
W30	Unilateral Tinnitus: what to Study
W31	Otitis and differentials
W32	Vascular Malformations: Brain and Spine
W33	General revision of Brain
W34	General revision of h/n
W35	General review of Spine

W36	Brain Trauma
W37	Spine Trauma
W38	AI: How to prepare a Dataset
W39	AI: How to label/annotate MRI imaging
W40	AI: State of the art
W41	AI: Python Basics
W42	AI: How to prepare a research paper
W43	Entrepreneurship: How to prepare a pitch for investors
W44	Entrepreneurship: How to prepare a business plan
W45	Entrepreneurship: How to apply for funding
W46	Spine: minimally invasive technics
W47	Brachial plexus
W48	The craniovertebral junction
W49	Spontaneous intracranial hypotension
W50	Scoliosis
W51	Paper presentation review
W52	AI review
W53	Brain Pitfalls and review
W54	Spine Pitfalls and review

We aim to cultivate a vibrant learning environment where you can acquire a deep understanding of the subject matter, cultivate innovative thinking, and explore entrepreneurial opportunities within the context of Neuroradiology and AI. Through weekly presentations, we provide a platform for intellectual growth, collaboration, and the exploration of new frontiers.

Embrace the exhilarating journey ahead as we unravel the intricate connections between Neuroradiology, AI, and Entrepreneurship. Immerse yourself in thought-provoking discussions, leverage the power of technological advancements, and discover how entrepreneurship can drive positive change in the field. Prepare to embark on an enriching voyage of knowledge, empowerment, and the limitless possibilities that await you.