



## CreditFair: The Authorship Equity Engine

### Documentation & User Guide

Release Date: November 2025

Platform: Universal (HTML5/JavaScript) - Client-Side Only

## 1. Executive Summary

**CreditFair** is a privacy-first, algorithmic decision-support tool designed to quantify academic contribution. It resolves the "Black Box" nature of authorship negotiation by replacing subjective arguments with a standardized, granular matrix based on international taxonomy.

Unlike traditional tools that rely on binary checkboxes ("Did you do this? Yes/No"), CreditFair uses **weighted fractional attribution** to calculate an objective "Contribution Score," facilitating fair ranking, dispute resolution, and ethical compliance.

## 2. The Problem & The Solution

### The Problem

- **Ambiguity:** "Authorship" is often decided by seniority or politics rather than actual work.
- **The "Tick-Box" Flaw:** Existing tools treat a student who did 5% of the analysis the same as a statistician who did 95%.
- **Ethical Risk:** Honorary authorship and "Ghost" authorship are rampant violations of academic integrity.
- **Conflict:** Disputes over "First Author" status are a leading cause of project delays and team friction.

### The CreditFair Solution

- **Granularity:** Contributors are rated on a 0-100% scale for 14 distinct roles.
- **Visual Proof:** Generates "Radar Charts" that create a visual fingerprint of each researcher's contribution.
- **Conflict Logic:** Automatically detects mathematical impossibilities (e.g., total contribution > 100%) and forces resolution.
- **Zero-Data Retention:** The tool runs entirely in the browser. No sensitive negotiation data is ever sent to a server.



### 3. Methodology & Benchmarks

The logic core of CreditFair is aligned with three pillars of academic publishing standards:

#### A. The Taxonomy Standard: CRediT (NISO)

The application utilizes the **Contributor Roles Taxonomy (CRediT)**, officially adopted by NISO (ANSI/NISO Z39.104-2022). This ensures output compatibility with major publishers including Elsevier, Springer, Nature, and PLOS.

- *Roles used:* Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Software, Supervision, Validation, Visualization, Writing (Draft), Writing (Review).

#### B. The Ethical Standard: COPE (Committee on Publication Ethics)

CreditFair implements COPE guidelines regarding authorship disputes.

- *Implementation:* The "Pre-Nup" mode allows teams to agree on roles *before* research begins, adhering to COPE's recommendation for early transparency to prevent misconduct.

#### C. The Validation Standard: ICMJE

The tool aligns with the **International Committee of Medical Journal Editors (ICMJE)** recommendations.

- *Implementation:* The "Acknowledgment Generator" automatically filters out contributors who do not meet the threshold for substantial intellectual contribution, moving them to the Acknowledgments section as per ICMJE criteria.

### 4. Algorithmic Logic & Features

#### 4.1. The Scoring Engine

The "Weighted Contribution Score" (\$S\$) for an author is calculated as:

$$S = \sum_{i=1}^{14} (C_i \times W_d)$$

Where:

- $C_i$  = The percentage contribution (0-100) for Role  $i$ .
- $W_d$  = The discipline-specific weight for that role.



### Discipline Weights ( $W_d$ ):

- **Standard:** All roles = 1.0
- **Biomedical:** Investigation/Lab work weighted 2.0x; Data Curation 1.5x.
- **Social Sciences:** Writing & Conceptualization weighted 2.0x+; Lab work weighted lower.
- **Computer Science:** Software & Methodology weighted 2.5x.

### 4.2. Validation Banners (The "Traffic Light" System)

- **RED (Conflict):** Triggered  $\sum C_i > 100\%$  for any role. The logic assumes a task cannot be more than 100% complete.
- **YELLOW (Gap Detection):** Triggered if  $0\% < \sum C_i < 100\%$ . This alerts the PI that parts of the work are unclaimed or incomplete.
- **GREEN (Valid):** All roles sum to exactly 100% (or 0% for irrelevant roles).

### 4.3. Special Logic Modules

#### 1. Co-First Author Simulator:

- *Trigger:* If the scores of Author 1 and Author 2 are within a **5% margin**.
- *Action:* Flags the result as "Equal Contribution" and generates the specific citation footnote required by journals.

#### 2. Acknowledgment Generator:

- *Trigger:* If an author's total score is **< 15%** of the Lead Author's score.
- *Action:* The author is removed from the Author List and formatted into an "Acknowledgments" paragraph.

#### 3. Journal Policy Engine:

- Contains specific rule-sets for *Nature Portfolio* (Anti-Honorary), *The Lancet* (Data Access), and *PLOS* (Inclusivity), alerting users to specific "Deal Breakers."

## 5. User Guide

### Step 1: Configuration

#### 1. Select Mode:

- *Assessment (Post-Hoc):* For papers already written.



- *Agreement (Pre-Nup)*: For starting a new project (generates a contract).
2. **Select Discipline**: Choose the preset that matches your field (e.g., Biomed) to apply the correct weighting.
3. **Target Journal**: Select your target publication to enable specific compliance warnings.

## Step 2: Data Entry

1. Click "**Add Author**" for each team member.
2. Use the **Sliders** to estimate the percentage of work done by each person for each role.
  - *Example*: If Author A wrote the whole draft, slide "Writing - Original Draft" to 100%.
  - *Example*: If Author A and B split the statistics, slide "Formal Analysis" to 50% for each.

## Step 3: Resolution

1. Watch the **Alert Banners**.
  - If you see a **RED** banner, you have over-assigned credit. Discuss with the team and lower the sliders.
  - If you see a **YELLOW** banner, you have under-assigned credit. Who did the missing work?
2. Review the **Radar Chart** to ensure the visual representation matches reality.

## Step 4: Export

1. **Copy Text**: Use the "Generated Statement" box for your manuscript submission.
2. **Save Session**: Click "Save JSON" to keep a local backup of the negotiation.
3. **Load Session**: Click "Load JSON" to retrieve a previously saved session
4. **Print/PDF**: Generate a formal report for the project file.

## 6. Technical Specifications

- **Architecture**: Single-Page Application (SPA).
- **Language**: HTML5, CSS3, Vanilla JavaScript (ES6).



- **Dependencies:** Chart.js (via CDN) for visualization.
- **Privacy:** No server-side processing. No cookies. Local Storage is not used (data persists only in RAM or via manual JSON save).
- **Browser Compatibility:** Chrome, Edge, Firefox, Safari (Desktop & Mobile).
- **Concept & Logic:** Dr. Muhammad AlShorbagy, Dean, College of Pharmacy, GMU.
- **Technical Implementation:** AI-Assisted Development (Code generation).
- **Methodology:** "This single-file HTML application demonstrates a 'No-Code/Low-Code' development approach. The domain expertise, algorithm logic, and user experience design were provided by Dr. Muhammad AlShorbagy, while the source code was generated via prompt engineering using Large Language Models (LLMs)."

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## 7. Disclaimer

*CreditFair is a decision-support tool. It does not replace institutional policy or legal advice. Final authorship decisions are the sole responsibility of the research team. The creators assume no liability for disputes arising from the use of this tool.*